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ORTHOPEDIC SURGERY AND THE CRIPPLED*

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ST. LOUIS

There are certain obvious truths concerning orthopedic surgery and the orthopedic surgeon to which it is my privilege as your chairman to call your attention. Orthopedic surgery is best defined as the special branch of surgery which includes the consideration of the deformities of the framework of the human body; of the diseases and lesions of the bones and joints; and of the peculiarities or defects in the muscular system. The orthopedic surgeon takes an especial interest in the surgical problems which arise within the boundaries just defined. Of necessity he finds the major portion of his work in lessening the difficulties that face the cripple. In not so very remote times our specialty considered only the correction of deformities which had been established by either accident or disease. At present we may divide the crippled into two classes: the actual cripple, that is, he who is either deformed or made lame and will remain so; and the potential cripple, he who is diseased or injured in such a way that before him lies the possibility either of becoming an actual cripple or of having such a condition prevented or alleviated.

In our various relations as orthopedic surgeons to the cripple it might be said that we are chiefly interested in the potential cripple. Here we still have the chance to prevent deformity, and we spend our efforts in the careful analysis of the causes of disease and disability with this end in view. We attempt constantly to improve our methods of surgical treatment which are focused on repair and restitution of function. Indeed, our minds become so absorbed in these surgical problems that we for the time may lose sight of the fate of those of our patients who are doomed to a greater or less degree of crippledom throughout life.

Orthopedic surgery may be said to be essentially conservative in its character. For those who are potentially crippled we have our hospitals and convalescent homes, our fresh air and sunshine wards in the open country, in the mountains and at the seaside. We are familiar with the work accomplished in this way, but we realize that, nevertheless, from these places, after all our care and skill have been exerted, there comes a varying percentage of the actually crippled. Again, from the more inaccessible districts of our country and from the metropolitan slum there also comes the neglected case, either an actual or a potential cripple, and we realize that it is in our province to determine the exact status of this cripple; his possibilities for recovery; his chances for assuming a normal place with his fellows in life. We realize our responsibility in believing that well-trained, competent orthopedic surgery must pass both verdict and sentence in this case and that on it falls the burden of decision in separating and classifying the various types and degrees of crippledom, and in being sagacious enough to so judge that even the more remote possibilities of return of physical function and usefulness are included in the vision.

It is to the status of the actual cripple that I wish to call your attention. In former times the cripple remained a cripple, was dependent either on his relatives or the community, and was reduced to the submerged position in society. He became a professional beggar or worked at some occupation that threw into the foreground his pitiable condition and his appeal for sympathy and charity. We realize more fully today the set of problems that faces him and those on whom he naturally depends, but we must realize also the moral claim he has on us as orthopedic surgeons.

Most of us are familiar, I believe, with the excellent report written by Miss Edith Reeves for the Russell Sage Foundation, on the care and education of crippled children in the United States. In this volume is set forth what is being done today in this direction. Among the more important factors brought to light are the following:

There are in the United States thirty-seven places where especial attention is given to the care of crippled children. Four of our states have taken on themselves the establishment of state institutions for their care. Minnesota, New York, Massachusetts and Nebraska have set aside funds and established modern hospitals and schools devoted to the conservation of their crippled children. Primary legislation for institutions of this kind has been adopted in Ohio and Illinois. Michigan and Wisconsin are caring for a small number of cripples in their state homes for dependent children.

The distribution of the thirty-seven institutions listed in this report is as follows: Maine 1; Massachusetts 2; Connecticut 1; New Jersey 3; New York 12; Pennsylvania 6; Maryland 2; Ohio 1; Illinois 4; Michigan 1; Minnesota 2; Nebraska 1; and Washington 1. Ten of the thirty-seven institutions are in two cities; namely, in New York and Philadelphia. Of the thirty-seven ten are classed as hospitals, fourteen as convalescent hospitals and

* Chairman's address, read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

homes, and thirteen as asylum homes. Seven of these thirteen homes care only for white children, and there is but one asylum home for colored children. There is no institution for crippled children west of Omaha, except in Seattle, and none south of Baltimore. Orthopedic surgery is done in the general hospitals in the South and West in cities like Charleston, Atlanta, New Orleans, Galveston, Los Angeles and San Francisco, but the work leaves the rural districts practically untouched.

As to the number of children cared for during the year, it is stated that in ten hospitals 662 were treated; in the convalescent hospitals and homes 945; and in the asylum homes 361; making a total of 1,968.

Let us turn now to the actual number of crippled persons in the United States. H. Winnett Orr has stated that with a population of one million there are cripples to the number of 3,500. According to Sir John Beyers there are a half million cripples in Germany, and the census of England shows that there are over 400,000 in that country. Professor Lange has stated that there are 98,000 crippled children in Germany. We have no accurate means of knowing what the numbers are in the United States, as our present census arrangement does not consider the taking of this information, but, according to the proportion of crippled persons in Germany, we should have about 133,000 crippled children under 14 years of age. Estimates run from 50,000 to 250,000 and vary with the enthusiasm of the person making the calculation. Of this, however, we are certain, that only about 2,000 annually are being cared for in properly equipped institutions. It seems, therefore, that what work is being done is located in our large centers, that orthopedic surgeons are collected in these centers, and that the rural districts are uncared for, and that on the whole the work in behalf of the cripple is truly in its infancy.

Much information on this subject is set forth in the excellent journal published by the Federation of Associations for Cripples and edited by Douglas C. McMurtrie of New York. This valuable adjunct to the work is also young, the first volume having appeared in 1914. In the pages of this journal one may trace the history of the effort in various countries of the world to better the physical and economic condition of the cripple. We as orthopedic surgeons may take considerable pride in the fact that always the orthopedic surgeon has inspired and advanced this effort. In our own land most of the work so far done has been accomplished by a comparatively few men. In the introduction to the report of the Russell Sage Foundation the following statement is particularly pleasant and gratifying to us:

> It is fair to say that the credit for this unique spirit in institutions for crippled children is due chiefly to the unselfish devotion of the orthopedic surgeons who lead the movement. Their spirit does not differ in kind from that of their brothers in other hospitals and other kinds of medico-philanthropic work, but this particular field offers a peculiar opportunity for the development and manifestation of altruism in its highest perfection. The patients are under care for a longer period than those in other hospitals, and the results are notable because of the special handicap.

To accept this praise is to admit our responsibility. The Section on Orthopedic Surgery of the American Medical Association has peculiar possibilities for the advancement of this most human of works. To me it seems that each member of this section who calls himself an orthopedic surgeon should realize the obligation that rests on him to educate his community and his state to the realization of the following facts: First, that the education of crippled children should be a special education, and second, that vocational training suited to the individual's capacity should be carried out and that this training should be given in a place suited to the physical condition of the cripple. Above all, that this special education is not an affair of private charity or philanthropy, but that it is the duty of the state—a duty made imperative not only by humanitarian considerations, but also by economic reasons.

It will be our privilege as orthopedic surgeons to stimulate proper legislative measures in our various states and to direct and advise the state authorities in this field of administration, and we must fit ourselves for this great mission.

If 50,000 crippled individuals lead lives of dependence and economic uselessness in our country, the fault is due to ignorance, and if ignorance exists on this vital topic the fault is largely ours. When we as orthopedic surgeons fully realize our place in the scheme of things, when we see with clear eyes our privileges, our duties, and our possibilities, then we shall have justified our position and our claims.

Humboldt Building.

MALIGNANT DISEASE OF THE LARGE INTESTINE

A PLEA FOR EARLY DIAGNOSIS AND EARLY RADICAL OPERATION *

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BROOKLYN

The study of malignant disease has been diligently pursued for many years. Large funds have been set aside for the purpose of research and much experimental work has been done in these diseases, but as yet we are not in possession of any positive knowledge as to the cause. Not knowing the cause little can be done in the way of prevention. As we can not exert the ounce of prevention we must strive to obtain the pound of cure. In all cases of malignancy the probability of cure is directly related to the earliness and thoroughness of removal.

Childe[1] insists that further improvement in the results of operations for cancer is chiefly to be looked for in the systematic education of the public; that it should be taught that early cancer is curable by operation, and that early cancer produces no symptoms of pain or ill health. We believe that these facts must also be more forcibly placed before the family physician, and those so unfortunate as not to believe in operative procedures must be converted. In cases of doubt exploration should be urged, for the clinical evidences of internal cancer become manifest only in the later stages of the disease.

It is easy to educate the public as to superficial growths, tumors in the breast and possibly ulcer and cancer of the stomach. Growths in the intestinal tract

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Childe: Brit. Med. Jour., July 20, 1907.

are so insidious in their development that the patient cannot be expected to aid in its discovery. We must look to the general practitioner for the early recognition of these tumors.

Cancer may occur at any point in the large intestine, but is most common at the sigmoid and the rectum and next at the cecum. The growth may be either carcinoma or sarcoma, but the former is by far the more common.

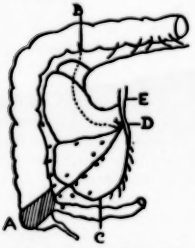

Fig. 1.—Excision of growth in cecum. *A*, growth; *B*, line of section of colon; *C*, line of section of ileum; *D*, point of ligation of ileocolic artery; *E*, middle colic artery. (After Jamieson and Dobson, Ann. Surg., L.)

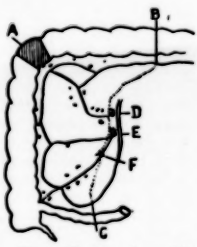

Fig. 2.—Excision of growth at hepatic flexure. *A*, growth; *B*, line of section of transverse colon; *C*, line of section of ileum; *D*, point of ligation of middle colic artery; *E*, point of ligation of right colic artery; *F*, point of ligation of ileocolic artery. (After Jamieson and Dobson.)

Tuberculosis of the hyperplastic form may easily be mistaken for cancer and is equally as serious a condition to deal with.[2] It is most likely to occur at the ileocecal junction and frequently involves the bowel at more than one point.

SYMPTOMS

Unfortunately the symptoms of cancer of the bowel are not very definite and many cases are brought to our hospitals as emergency cases to be operated on for acute intestinal obstruction, while the cause of the obstruction is a tumor which has been growing for many months, or perhaps one or two years.

No single or special group of symptoms appear in all cases, but the diagnosis must be deduced from a careful analysis of the entire case.

The disease occurs in patients beyond the age of 35, rarely earlier than this and most frequently beyond 50 years.

One of the most constant symptoms is constipation accompanied by flatulence. Constipation is usually obstinate and the patient finds it necessary to constantly increase the amount of physic to get the desired results. As the constriction of the bowel becomes more marked, pain or cramps develop, caused by the efforts of the intestine to overcome the obstruction. Diarrhea frequently alternates with constipation.

If the patient is thin or has lost much flesh the peristaltic waves may be easily observed through the abdominal wall. The pains are usually intermittent and the point of greatest intensity is at the site of the obstruction.

Obstruction of the bowel comes on so gradually that frequently it becomes complete before the true condition is suspected. In some instances this is due to the lodging in the small opening of the intestine of some solid or undigested particle of food.

2. Kandt: Long Island Med. Jour., April, 1915.

The symptoms of intestinal toxemia are present in nearly every case, and it is not easily remedied by the usual medical means. This is due to the stasis produced by the partial obstruction. Anorexia is frequently a prominent symptom and occurs quite early.

Loss of flesh and weight are present, as in all cases of cancer, but we have seen cases in which the patients have apparently retained their normal weight. Increasing weakness is present in most cases.

Cachexia does not usually appear until the disease is well advanced.

Vomiting does not usually appear until obstruction has developed.

Blood and mucus in the movements are valuable signs when present, but unfortunately are not observed unless the growth is in the rectum or lower sigmoid.

Ulceration with perforation may take place in the bowel wall immediately above the growth before obstruction has become complete. We have seen this in a number of cases in which a localized but spreading peritonitis caused the patient to seek medical aid.

Diagnosis in the early stages is not easy and, as we have already stated, is often not made until signs of complete obstruction appear.

Blood analysis is of some aid. In obstruction of the bowels the leukocyte count is always higher than normal, and when obstruction is nearly complete may be as high as 20,000 to 25,000, while the polymorphonuclear count may not be above 65 or 70 per cent. The changes of secondary anemia will be present.

Carcinoma skin reaction as proposed by Elsberg, Neuhof and Giest, and later studied by Lisser and Bloomfield,[3] is said to give a positive reaction in from

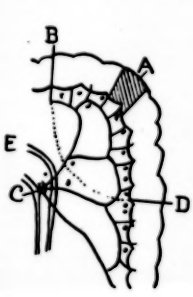

Fig. 3.—Excision of growth at splenic flexure. *A*, growth; *B*, line of section of transverse colon; *C*, point of ligation of left colic artery; *D*, line of section of descending colon; *E*, inferior mesenteric vein. (Jamieson and Dobson.)

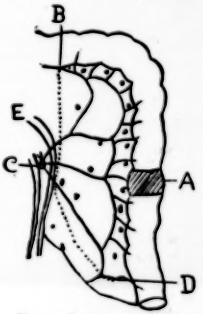

Fig. 4.—Excision of growth in descending colon; *A*, growth; *B*, line of section of transverse colon; *C*, point of ligation of left colic artery; *D*, line of section at sigmoid flexure; *E*, inferior mesenteric vein. (Jamieson and Dobson.)

70 to 89 per cent. of cases of cancer and in only 8 per cent. of noncancerous cases.

Abderhalden's ferment diagnosis may be of considerable help. Goodman[4] has reported thirty successful diagnoses in thirty-three cases of suspected cancer.

Observation of the abdomen will frequently disclose to sight and touch the exaggerated peristaltic

3. Lisser and Bloomfield: Bull. Johns Hopkins Hosp., 1912, p. 356.
4. Goodman: Surg., Gynec. and Obst., December, 1914.

action of the intestine. When present this is a positive sign of stricture.

The absence of a palpable tumor is not to be taken as a negative point in diagnosis.

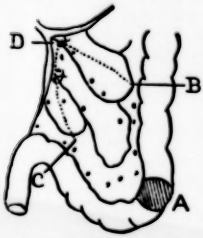

Fig. 5.—Excision of growth in middle sigmoid; *A*, growth; *B*, line of section above the growth; *C*, line of section below the growth; *D*, sigmoid arteries tied at their origin. (Jamieson and Dobson.)

Roentgenographic examination, combined with the use of bismuth by mouth and by injection, is frequently of great value. Case[5] states that when cancerous obstruction is present the following may be observed: (*a*) Delay in the passage of the bismuth varying from forty-eight hours to several days; (*b*) arrest of the bismuth given per anum; it must be shown that failure to fill the colon beyond a certain point is not due to want of pressure or to the presence of fecal masses; (*c*) dilatation of the bowel on the proximal side. The shadow may end in a funnel-shaped process when the obstruction is by ring stricture or by irregular lines due to the obstruction of a fungaceous mass in the lumen.

In using the enema the progress should be watched on the screen and any point of obstruction noted.

Even in early carcinoma it will be found that the head of the column halts at the site of the tumor and the distal colon distends under the pressure. Later the bismuth may be seen to slowly pass through the point of observation.

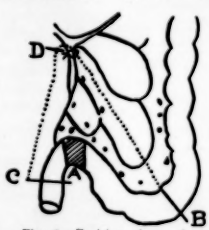

Fig. 6.—Excision of growth at the junction of sigmoid and rectum; *A*, growth; *B*, line of section through sigmoid; *C*, line of section through rectum; *D*, point of ligation of inferior mesenteric artery. (Jamieson and Dobson.)

PROGNOSIS

After removal of cancer of the bowel we believe the prognosis is better than for carcinoma in other parts of the body, the superficial cancers of course excepted.

The infected lymph nodes, as a rule, lie close to the bowel and visceral metastasis is very rare.

The nearer the anal margin the growth is situated the less favorable is the prognosis, for the last portion of the rectum is directly connected with the inguinal glands and these early become infected.

Treatment is surgical and consists in a thorough removal of the growth with the adjacent lymphatic glands. The exact procedure must vary according to the location of the tumor. In cases in which complete obstruction has already developed no attempt at removal should be made until the bowel is emptied of its contents. In some the bowel above the point of obstruction may be cleared by repeated lavage combined with abstinence of food by mouth. If the patient's condition permits, the lavage may be repeated several times. In the cases in which a small opening through the tumor has become blocked, this reversal of peristalsis will occasionally dislodge the small mass and reestablish the flow through the intestine. Should this occur, further attempts to clear the bowel may then be made by administration of full doses of castor oil.

In other cases the distention is very great and immediate relief must be afforded. In these a colotomy should be done on the proximal portion of the large bowel and then after a few days of thorough drainage combined with irrigation of the lower bowel the more formal operation for the radical removal of the tumor may be made.

In the presence of marked distention or impaction of the bowel above the tumor, resection should never be attempted until this condition has been relieved.

Removal of malignant growths in the large bowel may be successfully accomplished even after they have reached a considerable size, as they do not tend to form early metastases. Even with a knowledge of this fact we should make a thorough removal, including with the growth as much more of the intestine as may be necessary to include all glands that might possibly be infected. In determining how much bowel is to be removed we may well be guided by the studies of Jamieson and Dobson[6] into the distribution of the lymphatic vessels and glands, and of Clogg[7] on the arterial supply of the large intestine as indicating the limits of resection. The lymphatic glands of the large intestine are scattered along the course of the blood vessels, namely, the ileocolic, the right colic, the middle colic, the left colic and the inferior mesenteric.

In malignant disease of the cecum or ascending colon the portion of the bowel supplied by the ileocolic artery should be removed, that is, the terminal 6 inches of ileum together with the ascending colon to the hepatic flexure (Fig. 1).

If the growth be at the hepatic flexure the removal must include, in addition to the preceding, that portion of the bowel supplied by the middle colic artery, that is, to the middle of the transverse colon. In removing these portions of the large bowel care must be taken not to injure the duodenum, which is immediately behind (Fig. 2).

Growths at the splenic flexure require ligature of the left colic artery and as much of the bowel as is supplied by this vessel. These growths are rather difficult to remove because of the high attachment of the colon at this point, but it usually can be accomplished through mobilizing the bowel by division of the peritoneum as it passes on to the lateral abdominal wall (Fig. 3).

Fig. 7.—Author's colostomy apparatus.

In all cases that portion of the fatty tissue adjacent to the intestine and blood vessels must also be removed, for in this are the lymphatic glands (Fig. 4).

The sigmoid flexure and first portion of the rectum are to be considered together as they have the same blood supply, the inferior mesenteric, and develop from

5. Case: Interstate Med. Jour., xx, 1103.

6. Jamieson and Dobson: Ann. Surg., 1909, L, 1077.
7. Clogg: Lancet, London, Oct. 3, 1908.

the same embryonal tissue. The inferior mesenteric glands drain this area and a free removal of the intestine both above and below the growth should be resorted to (Figs. 4 and 5).

In case of growths of the rectum there has been a division of opinion as to the best method to follow and as to the production of an abdominal or a perineal anus.

As experience has grown, the almost unanimous verdict is now in favor of abdominal colostomy with the intestine brought through the rectus muscle. The successful production of a functionating perineal anus is so rare after a sufficiently radical removal of the disease that it is not to be considered. In an attempt to obtain it one is liable to fall short in the removal of the disease. With a properly fitted receptacle, such as we have devised, patients can be perfectly comfortable with the bowel opening on the abdomen.

As to the method of operating for rectal cancer my own preference is for the combined abdominal and perineal routes, preferably done in two stages. The technic of operation is not here described because many excellent articles have been already devoted to it.

Our object in presenting this communication is to draw the attention of the profession to the frequency with which cancer occurs in the large bowel, to the relatively low degree of malignancy and consequently high percentage of permanent cures after radical operation.

I desire to urge the general practitioner to investigate thoroughly all cases of obstinate constipation; to study carefully the cases of intestinal indigestion with symptoms of toxemia, especially in patients over 35 to 40 years of age; not to regard lightly the escape of blood from the anus, and not to think that hemorrhoids alone may be a cause; to examine more frequently the rectum with finger and speculum, especially when there is obstinate constipation or bleeding from the bowel, and in cases suspected of constriction of the bowel to employ roentgenoscopy by both plate and fluoroscope combined with bismuth injection.

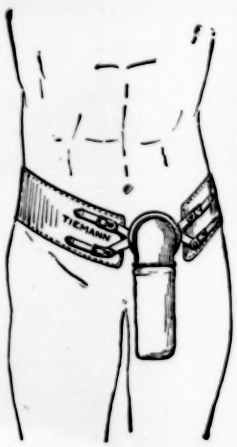

Fig. 8.—Author's colostomy apparatus with receptacle in position.

Finally I urge exploration in suspicious cases that, if necessary, early radical operation may be performed.

73 Eighth Avenue.

Exercise and Recreation.—These are, or should be, inseparable. Whether one walks, gardens, attends a gymnasium or plays golf, the exercise should be free from the spirit of drudgery and filled with the zest of enjoyment. A man's exercise should, if possible, be his hobby. No matter how poor the hobby, if it induces outdoor exercise, it is justifiable. The amateur geologist, botanist or ornithologist is perhaps less fortunate than the man who has a chicken yard or a garden, because one hobby can be cultivated only on favorable occasions and in selected places, whereas the other is an urgent daily absorption. The woman who has no maid to take the baby out for its two-hour airing is fortunate. Lacking the necessary baby, the influence of the poodle is not to be despised.—*Public Health Reports*, May 7, 1915.

A TWO-STAGE COMBINED ABDOMINO-SACRAL OPERATION FOR CARCINOMA OF THE RECTUM*

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There has probably been more discussion of carcinoma of the rectum in England, during the last two or three years, than in any other country, largely because of Mr. Sampson Handley's[1] statement that in a particular case, which he reported, the disease very early invaded the perirectal tissue, and the lymphatics of the bowel wall itself, for as much as 5 inches from the primary growth. In a letter published later, he calls attention to the fact that he did not state that carcinoma of the rectum always did this, but was very much pleased that his statement had brought about the discussion which he had hoped it would.

This statement has given rise to discussion of the relative values of the posterior operation, and the combined abdominoperineal operation; also many statements as to the comparatively benign character of these growths.

It has been stated by some of the older men that, because of this comparatively benign character, and because metastases take place late in the course of the disease, the simpler posterior operations are sufficient.

Mr. Paul[2] of Liverpool said, "Why should we undertake an extensive excision of the mesentery, for the removal of glands, which in all probability are not infected?"

Mr. Harrison Cripps,[3] in support of his statements, quotes his own excellent statistics, that is, 39 per cent. of three-year cures, but is this a fair impression, unless we go farther and consider that he examined 445 cases, and operated in only 108 of them? In other words, of the patients seen by Mr. Harrison Cripps, only 9 per cent. may be said to be alive three years later.

Henri Hartmann[4] collected 1,665 cases, with a mortality of 16 per cent. The result known in 982 cases was: Sixteen per cent. died from immediate effects of the operation, 58 per cent. died within three years of metastases, and 26 per cent. lived three years or more. That is, if the same proportion of patients seen were operated on, as in Mr. Harrison Cripps' series, but 6 per cent. of the patients seen were alive three years later.

May we not say, then, without exaggeration, that while carcinoma of the rectum may be a comparatively benign disease when seen early, and that metastases

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the East Surgical Service of the Massachusetts General Hospital.

1. Handley, Sampson: Brit. Med. Jour., 1910. i, 927.
2. Paul: Brit. Med. Jour., July 27, 1912.
3. Cripps, Harrison: Brit. Med. Jour., Oct. 5, 1912, p. 843.
4. Hartmann, Henri: Jour. de chir., December, 1913.

may take place late in its growth, it is one of the most fatal forms of carcinoma, when seen by the surgeon, and operated on by the posterior operation?

If I may be allowed to, I should say that the posterior operations have been popular because of two fallacies: First, they have been adhered to by some of the older men, because these men have deluded themselves into believing that carcinoma of the rectum is a comparatively benign disease, and rarely invades the surrounding tissue. Secondly, men have been led to believe that because they could get sufficient bowel to make a sacral anus, or do an end-to-end suture, after resecting the growth by a narrow margin, they were doing an extensive operation, and did not stop to consider that they were leaving the mesentery, with its lymphatics.

The first of these fallacies I have already disposed of. The second can be demonstrated by calling attention to the fact that the inferior mesenteric and superior hemorrhoidal arteries make a straight line, from the aorta to the fixed portion of the rectum, just below the promontory. It will be evident, also, that it is impossible to tie the vessel above the promontory; therefore, in order to bring the bowel down, the vessel must be tied and cut close to the bowel, and below the promontory. In doing this, the main lymphatics from the rectum are cut across, and left in situ with the artery, from the promontory up. It has been my misfortune to find perirectal growth, or metastatic glands in this region, in quite a proportion of cases, which must have been left by the posterior route. Mr. Harrison Cripps admits that his recurrences took place at the line of suture, and in the glands in the immediate neighborhood.

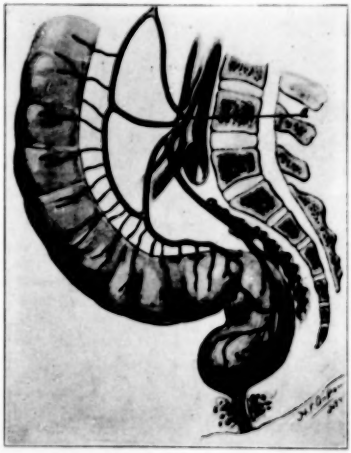

Fig. 1.—Diagrammatic sketch of the blood supply of the sigmoid and rectum through the inferior mesenteric; *a*, point at which the inferior mesenteric artery is tied.

Would it not be reasonable then to take a stand between that of Mr. Sampson Handley, and those who believe that a limited operation is always sufficient, and accept Mr. Cheatle's[5] view, who, after a careful study of serial sections of the whole rectum and surrounding tissue said, "I would advise extensive removal of the bowel where possible, but the result of the examination of my cases gives definite scientific reason to hope for a successful issue from a limited removal of the intestine, in cases which are obviously unfit for extensive and dangerous operations."

We will all agree that the posterior operation is the operation of choice in many cases, but must we not admit that our results with the posterior operations were not satisfactory; and if we do admit this, what can be done to improve them?

There are two methods open to us, first, the education of the laity, and profession; second, improvement of our technic. The first of these is of far greater importance than the second; a little education will save a great many more lives than a great improvement in technic.

Can any one doubt the necessity of educating the laity, and profession, when the average duration of prominent symptoms in patients entering the Massachusetts General Hospital was eleven months; that 75 per cent. of the patients had been treated for a longer or shorter period, for hemorrhoids; and that the other 25 per cent. were treated for diarrhea? Cancer of the rectum may be a comparatively benign disease, and probably does metastasize late; but is not eleven months of definite symptoms longer than one could expect even a carcinoma of the rectum to remain local? It should not be understood from this that there is any definite time limit in which a carcinoma becomes inoperable, for cases which give a history of symptoms for two years are not infrequently operable.

To improve this condition, the laity and medical profession must be taught to consider every case of hemorrhage from the rectum as cancer of the intestinal tract, until it is proved not to be.

The medical profession and laity know that hemorrhoids are the usual cause of bleeding from the rectum. The laity, therefore, delays about going to the physician, he in turn hears the story, and says without thought or examination, "hemorrhoids," and delays until the patient's condition is such that he knows there must be something more than hemorrhoids wrong with his patient; and finally, when it is too late, the physician sends the patient to the surgeon, or simply palliates the symptoms, because of his, the physician's, dread of a colostomy.

Physician after physician has excused himself on the ground that he could not make a rectal examination, for fear of losing his patient. On the other hand, patients have told me that they have threatened to leave their physician unless a rectal examination was made.

In passing, may I call attention to the manner of making rectal examinations? The "routine" examination of the rectum, as it is generally made, is worse than useless; because so superficial, it is often misleading. Mr. Harrison Cripps says that no protoscope is needed to make a diagnosis of carcinoma of the rectum, as any carcinoma of the rectum can be reached by the examining finger. I would add to this that few carcinomas can be felt by the examining finger, as the examination is ordinarily made.

Besides fighting against this ignorance of the public in regard to the seriousness of blood from the rectum, and the carelessness of the profession in regard to rectal examinations, we must educate the physician to believe that the artificial anus is not so terrible as

5. Cheatle: Brit. Med. Jour., 1914, i, 303.

he at present believes. This dread, we believe, is exaggerated beyond reason, as patients rarely complain seriously of the discomfort of the artificial anus, if they are relieved of their former symptoms. Many contented patients are doing their regular work cheerfully, with an abdominal anus; it is usually the ignorant who do not appreciate their hopeless condition, before operation, who complain.

I believe that many patients are never brought to the attention of the surgeon by the physician, because of this dread of an artificial anus. It is not at all an infrequent occurrence for patients, with seemingly favorable cases, to refuse operation, because they are seconded by the family physician in their idea that death is preferable to a colostomy. Is it fair for those who are in excellent health, and especially physicians, to decide, without sufficient data, such a serious question? I believe not, for the great majority of those who have actually been placed in this position seem contented after the colostomy has been done.

Education must be the means by which we make our greatest strides in the treatment of cancer of the rectum; but we must at the same time see that the technic of our operation is the most effective possible.

That the earlier, or posterior operations, were not entirely satisfactory is evident. The combined abdominal and sacral operation is, I believe, admitted to be theoretically superior, but has yet to be proved so practically.

There is very little use in quoting statistics in regard to the combined abdominosacral operations, for these operations appear to be of little real value as yet. It may be stated, however, without exaggeration, that the proportion of three-year cures is larger than with the posterior operation. It is quite evident also that the mortality is much higher.

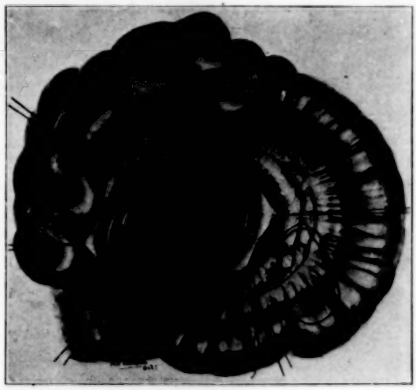

Fig. 2.—Reflection of the peritoneum from the mesentery of the sigmoid and from the rectum. Ureters pulled back with peritoneal flaps. Pelvis dissected.

Chalier and Perrin[6] collected 187 cases, with a mortality of 44 per cent.; they also collected 208 cases, by surgeons who had operated on from six to twenty-six patients with a mortality of 40 per cent. When I quoted these statistics to a friend from Chicago, he said that they were absurd. Perhaps they are today, but if they are, it is largely because of a more careful selection of cases.

Granted, however, that, in a condition such as this, the mortality is high, what does it matter if we can cure a larger percentage of cases than by the posterior route?

Perhaps the most important consideration, in connection with the abdominosacral operation, aside from its greater extent, is that a very much larger proportion of cases seen will be found operable than by the posterior operation, the percentage of operable cases with the posterior operation probably ranged between 20 and 30 per cent.; with the combined operation, this should be increased to 50 per cent. It is worthy of note, in this connection, that many cases which appear to be favorable for operation when examined below, have metastases which make them inoperable, when the abdomen is opened, and many of those which appear inoperable at the examination below are quite favorable when examined through the abdomen.

If we are to carry out the technic for malignant disease, as we do in other parts of the body, we must remove the growth by a wide margin, and with it, *en bloc*, the lymphatic systems connected with the region. This, as I have shown above, cannot be done by the posterior operation, so well as by the combined. While this is true, it must be admitted by all that the posterior, or Kraske operation, is the operation of choice in the obese, the feeble, and those over 60 years of age.

There would be very little argument, we think, against the more extensive operation, that is, the combined abdominosacral, provided we could reduce the immediate mortality to that of the posterior operations. This can be done, we believe, by the two-stage operation, without losing any of the important benefits of the one-stage combined operation.

Several two-stage operations have been devised. Among the more important are those by W. J. Mayo,[7] Dalghren,[8] and Coffey.[9] The simplest form of the two-stage operation is that of W. J. Mayo, in which the first stage consists of colostomy. The second stage is an amputation of the rectum by the sacral route. The distal portion of the sigmoid is left as a pouch, with its lower end closed, attached to the colostomy wound. This idea was essential, as will be seen later, to the two-stage operation to be presented.

In any two-stage operation we must find some method by which the extent of the operation shall be essentially that of the one-stage combined abdominosacral operation; that is, it should include as much of the lymphatic systems of the rectum as possible, and still leave sufficient blood supply to make it positive that the distal portion of the sigmoid shall not become gangrenous, between the first and second stages of the operation, and sufficient to supply the sigmoid, if that is to be brought down after resection of the growth. Practically all the two-stage operations with which we are familiar fall short in one of these two particulars. Dalghren, in order to avoid gangrene of the distal sig-

6. Chalier and Perrin: Lyon chir., February and March, 1913.

7. Mayo, W. J.: Ann. Surg., August, 1912.
8. Dalghren: Zentralbl. f. Chir., March 29, 1913.
9. Coffey: Ann. Surg., April, 1915.

moid, left the vascular arches intact. At the same time he left the main course of the rectal lymphatics by leaving the superior hemorrhoidal and inferior mesenteric arteries untouched above. Coffey avoided the dangers of necrosis after tying off the vascular arch by invaginating the distal portion of the sigmoid into the rectum, a process hardly possible in many cases. It will be seen that in both these operations very little more is accomplished than can be accomplished from below. In both, a sufficient length of bowel can be removed with ease, but there is no more extensive extirpation of mesentery and lymphatics than with the Kraske operation.

In what may be called the second type of two-stage operation reported by Dr. W. J. Mayo,[7] there is some dissection done from the abdomen, the superior hemorrhoidal is tied high, and the vascular arch is tied. In order to avoid gangrene of the upper rectum and lower sigmoid, he leaves the sides of the pelvis untouched, that the lateral sacral and middle hemorrhoidal arteries may supply the bowel above. He reports one case of perforation of the bowel, among the cases in which he used this method.

It has been my effort, therefore, to devise an operation in which an extensive operation could be carried out and still maintain the blood supply to the bowel between the first and second stages of the operation, and to supply any portion which it might be desired to leave.

I wish to present a two-stage combined abdomino-sacral operation which I now use with the greatest satisfaction.

The first stage begins with a median abdominal incision under ether anesthesia. The sigmoid and descending colon are mobilized, and the inferior mesenteric is tied just below the left colic branch. A long silk tie is left on the distal end, in order to identify it in the second stage of the operation. The peritoneal flaps are next dissected from the mesentery of the lower sigmoid and rectum, care being taken to keep at least an inch from the bowel, as recommended by Miles,[10] to avoid the chain of glands just beneath the bowel. These flaps are dissected back to the ureters, which are identified. The whole pelvis from the point at which the inferior mesenteric is tied, to the levators below, and from the ureters down on the lateral walls, is dissected as clean as possible.

The peritoneal incision is carried across the bowel at the rectovesical fold, and the bladder freed from the rectum for an inch or more. The rectum and sigmoid, with their mesenteries, are now held forward, and the peritoneum sutured behind the bowel and close about it.

If the sigmoid is to be brought through the sphincter, nothing more is done. If a colostomy is to be done, the loop of sigmoid is brought out through a rectus incision, or through a gridiron incision just above the anterior, superior spine, double clamped, and cut with the cautery, great care being used not to injure the vascular arch, at this point. The clamps are left on the bowel for twenty-four, forty-eight or seventy-two hours, depending on the comfort of the patient.

From five to seven days later, under spinal anesthesia, the second stage of the operation is carried out. The patient is put in the reversed Trendelenburg position, as used by the Mayos, a median incision is made, and the coccyx removed. If the rectum is to be amputated, the sphincter, ischiorectal fat, levators and all tissue between the ureters are freed, and the dissection carried up to the first-stage dissection. The bowel is clamped at the peritoneal floor, the vascular arch is tied, and the incision carried down through the mesentery to the incision in the mesentery made above, where the inferior mesenteric was tied. The bowel is now amputated with the cautery, the proximal end inverted, and a drain put in down to the stump.

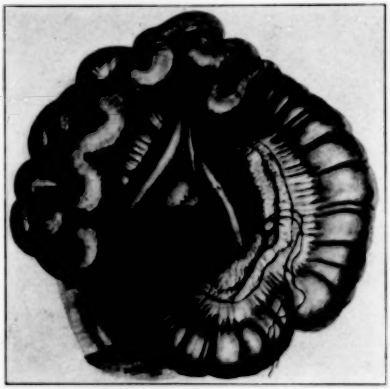

Fig. 3.—Peritoneal flaps closed over pelvis and about the rectum.

If the sphincter is to be left, the sigmoid is pulled down and amputated at the desired point, between a wire and a clamp, with the cautery, the bowel cut off just above the sphincter, the mucous membrane dissected from the remaining bowel, and the sigmoid, closed by a wire, is pulled down through the sphincter. A large drain is put into the pelvis to fill up the cavity left by the removal of so much tissue.

The essential points in this operation are: 1. The inferior mesenteric is tied high, and removed with the lymphatic channels accompanying it. 2. The sigmoid and rectum can be left in situ, after tying the inferior mesenteric and dissecting the pelvis, without fear of gangrene, as the vascular arches from the middle and left colic arteries are left intact to supply the bowel. 3. A thorough dissection of the pelvis is made, including most of the lateral glands, into which some lymphatics of the rectum drain. 4. By closing the peritoneal flaps about the intestines, the second stage of the operation is entirely extraperitoneal. 5. The effect of sepsis is much diminished. The five days between the two stages seem to be sufficient to seal the lymphatics of the pelvis, which reduces the immediate effects of the infection. Those cases which become infected show a comparatively mild course. This is of considerable importance, for, in the combined operation, there is a very large cavity left in the pelvis, after removal of the rectum, which it is almost impossible to keep clean. 6. In cases with partial obstruction, the dissection can be done before doing the colostomy, with little more effect than by doing the colostomy alone. In those cases in which it is desired to do a resection, the freeing up of the bowel, and then leaving it for five days,

10. Miles: Brit. Jour. Surg., October, 1914.

seems to diminish the obstruction, rather than to increase it. The contents will move through the section of bowel, the mesentery of which has been freed for 18 or 20 inches, fully as easily as through a normally attached bowel.

Some of the disadvantages of this operation as compared with the single-stage operation are: 1. A wide dissection is made and left exposed for five or seven days. Many lymphatics coming from the region of the growth are cut across, making it possible for cells from the growth to be deposited in the denuded pelvis. How great this danger is, I do not feel in the least certain of. One might say that if cells are running about in the lymphatics, they may as well be dropped into the denuded pelvis, as to be carried beyond into normal tissue. However, to obviate this difficulty, I have seared with the cautery as much of the surface of the mesentery as possible, to close the lymphatics. 2. Another disadvantage is the thickening and hardening of the fat, which takes place during the period of waiting, which makes an end-to-end suture somewhat more difficult. 3. The prospect of two operations is not pleasant to many; this is partially obviated by the use of spinal anesthesia for the second stage.

After using the combined abdominoperineal operation in one stage for two years, the advantages of the two-stage operation have so impressed me that I feel justified in offering this operation as one which will give the greatest satisfaction and solve many of the problems of this difficult surgical procedure.

Perhaps one of its greatest advantages is the fact that sufficient time may be taken to do a thorough dissection of the pelvis, both above and below. That this is important, I am convinced, because metastases which I have seen have been in the glands immediately beneath the bladder, and on the lateral walls of the pelvis.

Judging by the course of my cases, I am convinced that the mortality can be reduced to that of the Kraske operation. I say "judging by the course of my cases," for my statistics are not sufficiently good to warrant this statement from them alone. I have operated on sixteen patients by the two-stage combined operation, with three deaths, a mortality of 18 per cent. In extenuation of these figures, it may be said that no effort has been made to choose proper cases, because I was trying to convince myself as to its value. The three patients who died were all over 63 years of age. It may also be mentioned that a radical operation of some sort was done on 54 per cent. of the cases entering the hospital.

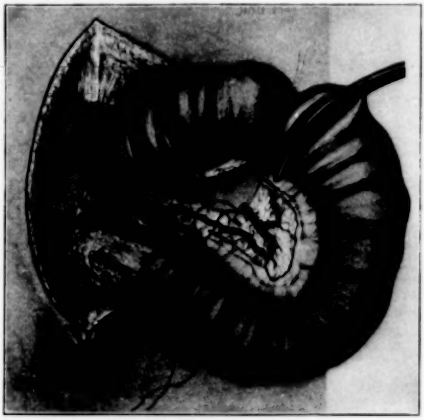

Fig. 4.—Dissection completed below for a resection of the rectum. Sigmoid tied off above with a wire and clamped below.

If under such circumstances we can reduce our mortality to 18 per cent., it is fair to assume that with proper selection of cases, it may be reduced to 15 per cent. or even 10 per cent.

A very important question to decide in the operation is as to whether there shall be a resection of the rectum, or an amputation. Statistics show that amputation gives a lower mortality, and a higher percentage of three-year cures. Miles of London believes, after careful investigation of recurrences of cancer of the rectum, that the only logical method is to remove the sphincter, ischiorectal fat and levators in all cases.

This I believe to be true, because of the recurrences I have seen in the last two years, in all of which there has been a local recurrence in the neighborhood of the suture, and metastases in the pelvic glands, in the immediate neighborhood. It is my firm belief that amputation of the rectum, with a permanent colostomy, is the method of choice, except in very rare instances.

Moynihan[11] and Bloodgood[12] both state that there are too many colostomies done, while it is my conviction, which is made stronger with every operation, that there would be a very much lower mortality, and a much higher percentage of three-year cures, if a permanent colostomy were done in all cases.

I have tried in vain to avoid the pitfalls which seem to be present in the operation for resection, without avail, and each attempt at resection has convinced me more and more that amputation should be the operation of choice. Some of my difficulties have been: the necessity of resecting nearer the growth than is desirable; the sloughing of the distal portion of the sigmoid, which occurred in spite of the fact that the bowel had been well nourished between the first and second stage, a period of five days. In another case, an opening was made into the bowel in separating it from the prostate and urethra. The patient was fat, and the distance between the ischia was very narrow. In still another, after two weeks of apparently solid union, a sinus opened at the line of union.

In addition to these dangers, there is the added risk of infection, which must always take place to a greater or less extent in every resection. As Mayo has said that 90 per cent. of the deaths in operations for cancer of the rectum are owing to sepsis, this must be an important consideration. It is certainly a much more attractive proposition to feel that you are to leave your patient with a sphincter than without, but

11. Moynihan: Surg., Gynec. and Obst., May, 1908, p. 463.
12. Bloodgood: Surg., Gynec. and Obst., 1906, iii.

it must be remembered that it is impossible to be sure of a useful sphincter, in these cases. The extensive dissection, the large amount of cicatricial tissue and the disturbed sensation of the anal region are very likely to leave a sphincter which is useless, and, as has been said, "An abdominal anus is much better than an uncontrolled anus in its normal position."

A permanent colostomy no doubt has many disadvantages. Chief among them is the impossibility of getting the consent of the patient to the procedure in some cases. I cannot urge operators too strongly, however, to do in the great majority of cases the operation which will give the patient the best chance for a permanent cure, and the lowest mortality. This, I believe, is obtained by amputation rather than resection. To quote Chalier and Perrin, resections gave 11 per cent. of three-year cures, while amputation gave 22 per cent. That there is an occasional case in which resection should be done, cannot be denied. This should not alter the rule, however, that a permanent colostomy should be done in all cases.

A word as to the treatment of inoperable cases: A colostomy, in spite of its disagreeable features, relieves most of these patients tremendously, while in some other cases, the tenesmus and constant discharge of pus and blood continues. This measure of relief is often denied patients, because it is believed that the patient will live only a short time. But these patients live on and suffer for a much longer time than is generally counted on. Mr. Harrison Cripps has shown that among his patients, those on whom he did a colostomy lived twenty-two months, while those without a colostomy lived 7.8 months.

Fig. 5.—Completed second stage with amputation of the rectum.

It has been hoped that radium tubes, placed in the bowel in direct contact with the growth, would give some relief, but the cases treated here have thus far been disappointing. Sampson Handley reports a case, apparently inoperable, which became operable, after the use of radium, and in which the patient was well at the end of a year after operation. We may hope for some relief from this source before long.

At the present time, we have hopes that the heating of these growths, with the Percy cautery, will be of benefit in lessening the discharge and pain. In the male, we have carried out a technic similar to that of Percy for carcinoma of the uterus. The abdomen is opened, and a small opening just large enough to admit the index finger is made in the posterior wall of the bladder; one finger is put through this opening into the bladder, and the rest of the hand about the rectum to control the heat and guide the cautery. A Boldt water-cooled speculum is placed in the rectum, and the cautery pushed upward through the growth, until the whole growth is heated and melted away, as in the uterine growths.

We have used this method but twice, but have been very favorably impressed with the results thus far, in that the discharge has diminished, and the tenesmus has been lessened. Any improvement, however slight, seems worth while in this deplorable condition.

I cannot close this paper without emphasizing the fact that if the combined abdominosacral operation has any advantage over the posterior operations, it is so slight that it amounts to nothing compared to the advantage that would be gained if cancer of the rectum could be recognized earlier. There is a long period, I am sure, when the disease is local, and when a local or posterior operation would be sufficient to cure.

195 Beacon Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. H. BEECKMAN DELATOUR AND D. F. JONES

Dr. Miles F. Porter, Fort Wayne, Ind.: A few pertinent figures will serve to emphasize the importance of this paper. More than one person in every 1,200 in the United States dies of cancer every year (Rodman: The Journal, 1908, li, 1542). In the mortality list of the United States cancer ranks sixth (*Med. Rev. of Rev.*, 1911, xvii, 166). Stierlin (*Ann. Surg.*, 1890, xi, 206) says that of all deaths from cancer 3⅓ per cent. are due to cancer of the rectum. About half of all cancers originate in the hollow viscera of the abdomen exclusive of the bladder. Mistakes in diagnosis are common. Benign conditions have been mistaken for malignant ones and vice versa by many. In the absence of microscopic examination diagnosis is sometimes impossible. And in this connection it should be remembered that some parts of a given tumor may be benign and other parts malignant, and that multiple growths may be found, some of which may be innocent and others malignant. Also the possible coexistence of syphilis, tuberculosis, and cancer should constantly be borne in mind. Possibly we may in the near future get some help in diagnosis from the serum (Abderhalden) test. Goodman and Berkowitz diagnosed 30 out of 33 cases by this method, and Cytronberg's experiments seem to confirm the correctness of the principle of the reaction in the dialysis method (*Am. Jour. Med. Sc.*, May, 1915, p. 761). Unfavorable results obtained from treatment are chiefly due to delay. Only about 50 per cent. of these cases are operable when they first present themselves to the surgeon, usually after two or three years' duration of the disease. Routine roentgenographic, sigmoidoscopic and digital examinations, the latter done with the patient standing, will do much to help in the diagnosis of these cases. The arrangement of the lymphatics makes metastasis slow and accounts for the relatively good operative results as pointed out by Madelung, Mayo and others. However, this arrangement of the lymphatics should not lead to less wide excisions than obtain generally in cancer, for the local spread of the disease may be quite wide, and, indeed, usually is, because most patients do not present themselves to the surgeon until

two or three years after the commencement of the disease.

Kelling succeeded in producing tumors in hens by injecting into their abdominal cavities chicken embryos. He found it essential to success, however, to sensitize both the donor and the recipient. These experiments sustain the theory of Cohnheim and show that alien albumin favors the development of tumors. Hence patients after the removal of cancers should avoid raw albumin as food, and it should also be avoided by those who have conditions predisposing to cancer, and by patients with gastric and intestinal lesions, for those lesions render the alimentary wall permeable to alien albumin.

DR. C. B. DAVIS, Chicago: The paper of Dr. Jones represents the accepted view of the majority of men doing any considerable amount of work in cancer of the rectum. No single procedure either low or high should be selected for all cases. It is along these lines that we have had the greatest variety of opinion in this field, one man insisting on the lower or perineal route and another on the sacral route, and others advising a combined operation. There is a feeling now that the abdomen should be opened to determine operability, the extent of the growth, and to mobilize the bowel preliminary to the work by the sacral route. Dr. Mayo summed this up well when he suggested that all operative procedures in this region should be judged from the immediate mortality, a functionating anus and the ultimate prognosis. Preservation of the anus is ideal of course, but an anus not controlled by its own nerve supply is not comparable with an anus in the abdomen. The sacral anus has been employed more frequently in the past than the abdominal anus. With the abdominal anus, if the bowel is brought down in a large loop and then brought through the abdomen, greater security and comfort are given to the patient. The abdominal anus will never be chosen voluntarily by the patient, but we should insist more often on the bowel being treated in this manner. The ultimate prognosis of the two types of sacral operation and the abdominal procedure have been worked out by Hartman of Paris. He showed that recurrence following operations treated by the abdominal route were 18 per cent., while recurrence in cases handled by the sacral route showed a recurrence in 68 per cent. of the cases. Thus in attempting any given case we should have constantly in mind the two alternatives, a low immediate mortality with a high percentage of recurrence, or a somewhat higher mortality with a tremendously reduced recurrence percentage.

DR. ALEXIUS MCGLANNAN, Baltimore: About two years ago we studied ninety cases of cancer of the colon of which there were specimens in the laboratory. The clinical history of the cases, particularly the history of the early symptoms of the disease, was exactly in accord with the symptoms noted by Dr. Delatour. The cases were divided into two large groups having nearly the same number of cases in each. In the first group we had the symptoms of obstruction and in this series if the patient did not die as the result of the obstruction, we had good results as far as permanent cure was concerned. In the second group the prognosis was bad, as most of the patients died from the tumors. When looked into pathologically we found in the group of cases with obstruction that the tumors were cylindrical cell cancers, growing into the lumen of the intestines and with metastasis largely limited to the nearest group of lymphatic glands; while on the other hand in the fatal group of cases we found cuboid cell carcinoma, soon growing into the subperitoneal tissue of the bowel, and then early and widespread metastasis. This relation of clinical course and pathologic picture was probably the most interesting thing in the study.

DR. LOUIS J. HIRSCHMANN, Detroit: The important point regarding carcinoma of the large bowel and rectum which should be emphasized is this question of early diagnosis. Dr. Delatour spoke of care used in examining these patients. No matter if you find hemorrhoids, fistula or fissure, don't be satisfied, because often you may find a carcinoma higher up accompanying the lower minor condition. I have examined several patients after minor operations had been performed in good hospitals by competent men and carcinoma within reach of the finger was undiscovered. Always look higher up no matter how apparently simple is the case. In the diagnosis of carcinoma of the large bowel, use fluoroscopic palpation. If there is an impaction in the large bowel, fluoroscope and then palpate. Where the fluoroscope shows narrowing, irrigate and feel the spot and examine closely and a haze will be seen around the narrowing which is diagnostic of carcinoma. In resection, we have more or less narrowing of the lumen, usually less in good surgery, but where this exists we have some obstruction to the fecal current even in the best operation. If we will just do the same thing in a carcinoma as in intestinal stasis and short-circuit, we will reduce the operative mortality and percentage of recurrence.

DR. ROBERT C. COFFEY, Portland, Ore.: I am very glad nearly all agree that the two-stage operation is the one of choice and gives the best results. I have always been content to follow Dr. Mayo in this work because of his results. We have somewhat modified the technic, however, by doing the major procedure first as follows: (a) Pass a rectal tube with an eye on each side up through the rectum past the growth, and let this remain so that the sigmoid empties itself during the progress of the operation. (b) Mobilize the sigmoid and rectum down to the bottom of the culdesac, as shown in the original article published in the *Annals of Surgery*, April, 1915. Cut the intestine in two between Payr clamps. Sew up the two ends. Cut and tie the superior hemorrhoidal artery. Dissect the pelvic fat down as Dr. Jones has recommended here. Now push the rectal tube up to the end of the distal segment, pass a silk suture through the upper end of the intestine and through the two eyes of the colon tube. Swab the sutured end of the distal segment with iodin, and invert the intestine by pulling on the rectal tube until the intestine is brought out through the anus, making an intussusception. Suture the peritoneum over the raw edges and draw it over the intussuscepted end, making the growth extraperitoneal. Bring the proximal end of the sigmoid out through a stab wound, making a permanent anus through the left rectus. This gives the best results even if objected to by the patient. We now refuse to make a sacral anus, because we know it is not so good. At the next operation simply do the Kraske operation, removing the growth whole, and it is a perfectly simple operation. Our results have been much better and we have had less shock by this method than by any other method which we have tried. We have operated on nine patients by this method with one death, and we have one in the hospital now who is ready for the second operation. By doing the major portion of the operation first there seems to be less shock, in our hands, and we believe it is an improvement over other methods.

DR. JOHN RAWSON PENNINGTON, Chicago: In cancer of the rectum we can by proper proctoscopic examination determine conditions just as well as on the surface of the body. We cannot do it with the finger and speculum, but must use the protoscope and locate it properly. Examinations should be made of all patients over 40 years of age in order to detect conditions of this kind. In regard to the abdominal operation, the last speaker said that we were united in doing the two-stage operations, but I have used only the one-stage operation, and in doing this I have followed the technic advised by Miles. When doing the operation, after the abdomen is opened, with the patient in the Trendelenburg position, locate the ureter and the inferior mesenteric artery and divide the peritoneum down on either side with your hand and scoop out all lymphatics down to the coccyx and in front separate the rectum from the tissues half way down to the vagina or prostate; separate the rectum, going down to the levator ani on either side; at this junction close by purse-string suture and stitch the wound on the side and close the peritoneum over this. Close the abdom-

inal wound and put a purse-string suture around the anus, and the operation is completed in a very few minutes. I see no reason why we should make a two-stage operation of that condition.

Dr. H. B. Delatour, Brooklyn: During the past winter I had five cases of acute intestinal obstruction due to malignant disease. This has prompted me to present to you today the paper which I have read: Three of these cases were inoperable; one had perforated bowel above the point of the cancer and general peritonitis resulted. The other two cases were sent in as appendicitis with vomiting, and in both cases it was easy to make out on examination and history that the mass was not due to appendicitis but was due to carcinoma in the colon, and resection was done with a successful result. I believe we should try to educate persons into the feeling that artificial anus is not such a terrible thing. Some say they would rather die than have an artificial anus. I believe with a properly placed anus and proper instructions given the patient as to its care, that these people can go through life with comfort. I have a patient wearing a colostomy cup and attending to business for eight years. He finds no distress due to the presence of the anus. I believe the anus should be placed in the median line rather than to one side.

Dr. D. F. Jones, Boston: I agree entirely with what Dr. Delatour has said about the artificial anus. The great difficulty at present is that we frequently have to persuade the patient to consent to a permanent colostomy, after they have been advised by the family physician not to consent to one. In regard to carcinoma of the rectum, I do not mean to convey the idea that all cases should be submitted to the two-stage combined operation, but would like to impress on you that the location of the growth has nothing whatever to do with the decision as to what operation shall be used. If the patient is over 60 years of age, the posterior operation should be done.

The Hampton Leaflets.—We have received from the Hampton Normal and Agricultural Institute at Hampton, Va., a number of pamphlets printed and distributed by the institute for the benefit of the students, graduates and patrons of that institution. Among the titles of these valuable and interesting publications are: "Injurious Insects"; "The House Fly as a Carrier of Disease"; "Hookworm Disease and the Negroes"; "Housekeeping and Sanitation for Rural Schools"; "Mosquitoes"; "The Prevention of Tuberculosis"; "Responsibility of Teachers for the Health of Their Children." One of the pamphlets is, "Patent Medicines and the Negro," in which a warning is given as to the worthlessness and danger of all sorts of nostrums. These pamphlets have a practical educational value and their influence among the patrons of the institute cannot help but be good. Accompanying the pamphlets are the Forty-Seventh Annual Report of the Principal and the annual catalogue of the institute, which show the institution to be in a prosperous condition and doing good work.

AN UNCOMMON CASE OF MULTIPLE BENIGN SARCOID OF THE SKIN*

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CHICAGO

Etymologically the term "sarcoid" would seem to convey the conception of a tumor formation resembling sarcoma. It was first employed by Kaposi to comprise a number of cutaneous disorders, including mycosis fungoides, lymphodermia and even true sarcoma. Its more general and exact use dates from Boeck's publication in 1899. He there described as multiple benign sarcoid and, later, in 1905, as benign miliary lupoid, cases presenting numerous deep-seated cutaneous nodules or tumor-like formations of varying size, situated on the face and other parts of the body, presenting a characteristic histologic picture and thought to be due to a modified effect of the tubercle bacillus.

Fig. 1.—Sarcoid of the skin; lesions on face.

Far from strengthening or clarifying this new clinical and pathologic entity, further observations have rather complicated the situation, not only in morphologic respect, but also in regard to the histology and etiology. Thus we find Darier in 1910 giving us four types of sarcoid, based on a careful analysis of about thirty-five cases, viz.:

1. Boeck's type: Tuberous, papular and diffuse infiltrating form.

2. Darier-Roussy type: Subcutaneous sarcoid, symmetrically distributed on the trunk, histologically resembling tuberculosis.

3. "Sarcoides noueuses et nodulaires," resembling erythema induratum.

4. Spiegler-Fendt type: Round cell, nontuberculous tumors.

Since 1910 there have been reported probably less than thirty cases.

Plancherel collected reports of twenty-two instances of sarcoid, of which fifteen were of Boeck's type, seven of the subcutaneous variety and of the erythema nodosum type. Sutton has recently reported an unusual case in a child 2½ years old, showing lesions on the face. At the last meeting of this Association Sweitzer[1] reported, together with a review of the whole subject, a case of supposedly typical Boeck's sarcoid. In view of this recent contribution, a detailed survey here of the literature would seem superfluous.

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Sweitzer, S. E.: Sarcoid of Boeck, The Journal A. M. A., Sept. 19, 1914, p. 991.

That many cases of sarcoid bear a more or less intimate relationship to tuberculosis must be admitted from a study of the material collected so far. But whether we should readily identify sarcoid and tuberculosis, as Fordyce recently suggested in a discussion before the American Dermatological Association, seems as yet open to debate. Let us briefly analyze the last twenty-eight cases reported. In five of them a family history of tuberculosis is recorded. Ten cases presented concomitant features of tuberculosis, such as iridocyclitis, glandular affections and other signs. Stümpke reported a case of sarcoid associated with generalized tuberculosis. Kyrle emphasizes the resemblance of the histologic picture in real tuberculosis of the skin to that of benign miliary lupoid. Tuberculin injections produced a general reaction in five, a local reaction in two cases. The Pirquet test proved positive in three instances. Animal inoculation, undertaken by various investigators, has in most instances given negative results, though Morovetz, Kyrle, Volk and Sweitzer report positive effects. In twelve cases careful searching for tubercle bacilli was unsuccessful. So were stains for Much's granules. Most of the cases of the erythema induratum type showed unmistakable evidences of their tuberculous nature.

These apparently divergent findings need not surprise us, when we look back at the history of lupus by way of analogy. Here also, in this classical form of cutaneous tuberculosis, as we regard it today, demonstration of bacilli is very difficult and if at all successful, only in very small numbers. Here, also, the subjects affected by it often enjoy robust health and present no vestige of other foci of tuberculosis. And it has taken many years of struggle to establish its etiologic position.

A somewhat different attitude may be justified as regards the supposed relationship of sarcoid to syphilis, which has been brought out by some recent observations. Ravaut reports two cases of angiolupoid, one of the patients giving a positive Wassermann, and both cured by salvarsan. Similar experiences are recorded by Brocq, Tzank and Pelbois. Pautrier noted the simultaneous occurrence of a serpiginous syphilid with a sarcoid tumor of the nose, clinically and histologically typical. The Wassermann was positive and both kinds of lesions responded to salvarsan. He also describes another case of ulcerative sarcoid of the Darier-Roussy type of the upper arm showing epithelioid cells, giant cells and lymphocytes histologically, which was eventually cured by injections of sodium benzoate. A similar observation was made by Plancherel. Pautrier insists on the necessity of revising the sarcoid group, and its division into two classes, the one belonging to the tuberculids, the other related to syphilis.

It may be permitted to point, in this connection, to the remarkable capacity of syphilis for imitating other well-defined clinical pictures. We know this to be true with reference to lichen planus, to lupus vulgaris and lupus erythematosus, to psoriasis, erythema induratum and many other diseases. On the other hand, it must be insisted that a positive Wassermann and even response to salvarsan do not of necessity establish as syphilitic any lesion happening to be present on the skin. For a patient with latent syphilis may be yet capable of developing on the skin lesions which in themselves are not the products of syphilis. And salvarsan on account of its arsenical effects will often cure cutaneous disorders other than syphilis. It therefore seems not improbable that some cases reported as sarcoid do not really belong to that class. Similar errors are liable to occur, after all, in the case of any unusual dermatosis, for the human eye is not infallible, and even the microscope and the test tube do not protect us against errors. To establish finally the clinical and pathologic entity of a so-called new disease we must continue to study each case carefully and record our findings. It is to this end that the following report is here submitted.

Fig. 2.—Sarcoid lesions on hand and face.

REPORT OF CASE

History.—Giacomo F., aged 36, saloonkeeper, presented himself, Oct. 31, 1914, for examination, through the kindness of Dr. W. P. Curtis of Chicago. Patient was born in Italy, lived in Brazil from 1892 to 1897, when he came to this country. He has been married for ten months to an 18-year-old, perfectly healthy woman. A baby, 4 weeks old, is in every respect well. Patient had gonorrhea and soft chancres eighteen years ago, but no cutaneous eruption at the time. While in South America he had yellow fever. He has had sore throat repeatedly and has been treated for it with mercury and iodids. There is no evidence of tuberculosis in his family history.

Present Illness.—In May, 1914, he noticed a red spot on his left buttock, and on the following day a similar one appeared on his cheek, causing some itching and burning. At the same time he had a sore throat and a painful cord formed at the angle of the right jaw. New spots followed in rapid succession on the face, the arms, legs and the back, while the older ones became larger. He describes them as pinkish nodules or swellings of the skin. The family physician pronounced his case syphilis. Two salvarsan injections were given intravenously, followed by ten intramuscular injections of mercury with no improvement whatever, but a continued

multiplication of the lesions. A Wassermann test made at the beginning and again in August proved negative. The patient's general health has continued good and there has been no loss of weight. Appetite is good and bowels regular. Formerly a heavy drinker, he has become very temperate.

Examination.—Well-nourished man of short stature, weighing 136 pounds. There is an external strabismus of the left

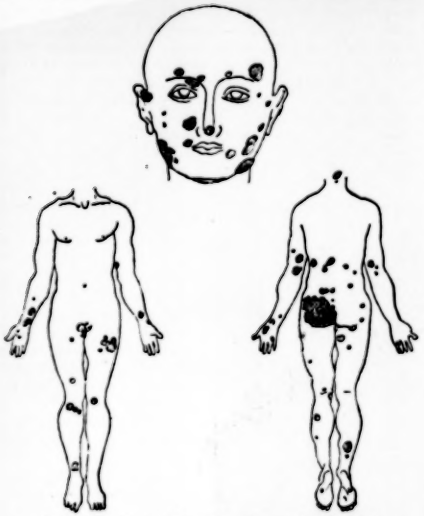

Fig. 3.—Distribution of sarcoid lesions on face and body.

eye and a deformed iris due to an old injury. Careful examination of the chest and abdomen revealed nothing abnormal. The genitalia are normal with exception of very small meatus. The ulnar nerves show no enlargement at the cubital region. The knee reflexes are normal.

The urine shows a few shreds, a faint trace of albumin and microscopically a few hyaline casts and leukocytes.

A blood count made on two occasions showed: hemoglobin, 90; red blood cells, 5,250,000; leukocytes, 4,800; differential count: neutrophils, 62; small mononuclears, 30; large mononuclears, 5; eosinophils, 2; basophils, 1.

The mucous membranes are pale and free from any lesions. The tongue is moderately coated. The teeth are in good condition. At each angle of the jaw a hard subcutaneous cord is palpable, running in the direction of the sternomastoid. A few small movable cervical glands can be felt. The suboccipital glands are markedly enlarged. The axillary glands are barely noticeable. A distinctly enlarged cubital gland is present at the right elbow, none in the left. The inguinal glands are firm and bean-sized.

Cutaneous Manifestations.—The eruptive features present an unusual, almost grotesque picture. Their distribution may be best seen in the accompanying illustrations. The lesions on the face (Figs. 1 and 2) are sharply circumscribed nodules and infiltrated plaques varying in size from a split pea to a half dollar. They are brownish red in color, at times almost bluish red. Situated superficially, they are markedly raised above the level of the skin, easily movable, and of a tumor-like, firm consistence. Under glass pressure their color changes to a yellowish brown, and occasionally there can be seen miliary foci. A few of the lesions show fine telangiectases. There is no tendency to scaling. Chest, upper abdomen and shoulders are not invaded. In the lumbar regions are about ten round tumors, dark red, sharply demarcated and varying in size, from 0.5 to 3 cm., in diameter. The left gluteal region is almost totally occupied by an irregularly outlined plaque, whose borders show a distinct infiltrate, while the center is flattened, suggesting a peripherally progressing, somewhat serpiginous development. The color on the borders is dark red while the center is light brown. On the lower extremities are a few scattered symmetrical infiltrates of irregular contour, rather yellowish brown in color and lichenoid in type. On the sole of each foot is a small brownish nodule. Near the elbows and wrists of both arms several irregularly shaped plaques with raised borders and depressed centers. The back of the right hand shows some small infiltrates and two brownish nodules on the thenar eminence of the palm. There is one small lesion on the scrotum and several flat lichenoid efflorescences on the glans. Nowhere is any tendency to ulceration evidenced. The subjective features of the eruption are insignificant, but the cosmetic disturbance is greatly annoying to the patient.

Microscopic Study (Fig. 4).—Two lesions were excised from the back for purposes of histologic study and hardened in Zenker's fluid and formaldehyd solution. The sections were subjected to the usual stains, and in addition special stains for acid-fast bacilli were made.

The epidermis was unchanged except for a slight parakeratosis. The corium was occupied by infiltrated areas in the perivascular and perifollicular spaces. The infiltration was diffuse in some sections, more sharply demarcated into nodes in others, and extended down to the subcutaneous layer. The nodes were separated by connective tissue without evidence of inflammatory reaction. The infiltrates were composed of epithelioid cells, round cells and giant cells of the Langhans type. There were no evidences of caseation. The

Fig. 4.—Section of sarcoid lesion; from photomicrograph.

blood vessels showed varying degrees of endarteritis. Plasma cells were absent. The elastic tissue was thinned out. The glands were not affected. Numerous sections were stained for tubercle bacilli and Much's granules without success. The sections were submitted for inspection to Prof. Robert Zeit of the Northwestern University Medical School, who, without any reference to the clinical phases of the case, unhesitatingly pronounced them as presenting the picture of tuberculosis.

I desire here to express my sincere thanks to him for his kind interest.

Animal Inoculation.—Two guinea-pigs were inoculated with pieces of tissue from the tumors, one subcutaneously and one intraperitoneally. Three months later both pigs were necropsied and found to be perfectly healthy.

Tuberculin and Luctin Tests.—The Pirquet and Moro tests were negative. The luetin test was also negative. No reaction was obtained from 0.5 mg. of Koch's O. T.; 2 mg. caused a rise of temperature to 99 degrees, general reaction with headache and malaise but no local reaction in the lesions themselves.

Much of the work above recorded was done by my son, Dr. Erwin P. Zeisler, to whom I desire here to give credit due him.

Diagnosis.—At first sight the cutaneous picture seemed so unusual that, while sarcoid was at once suggested, a careful differential diagnosis became important. Syphilis, for which the patient had been treated, could be excluded without difficulty, not merely through the negative Wassermann and the lack of response to specific medication. The protuberant lesions, if syphilitic, would have to be addressed as gummas; as such they would show a tendency to break down and ulcerate. The large flat plaque on the left buttock (Fig. 5) was entirely foreign to the usual appearance of syphilitic lesions. Nothing in the history of the case pointed to that diagnosis. The freedom of the mucous membranes and the healthy condition of the baby were further arguments against it.

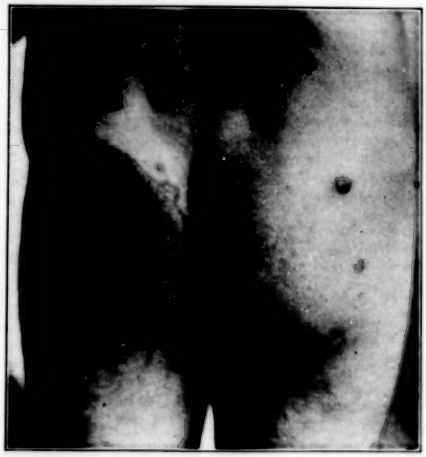

Fig. 5.—Sarcoid lesions on buttocks.

Lepra was considered on account of the patient's sojourn for a long time in South America. The absence of the characteristic leonine facial expression, thickened ulnar nerves, anesthetic areas, any tendency to ulceration and bacilli in the sections seemed sufficient to dispose of that possibility.

Lupus does not appear at so late a period in life, in such rapid development, or in the form of such large flat plaques as in this case, and only rarely in such large numbers of lesions on the body.

Mycosis fungoides, also, develops much more slowly, usually after a long period of precursory phenomena, shows great tendency to breaking down of the lesions, general cachexia with itching and burning of the skin and a progressiveness which was markedly lacking here.

Lymphodermia could be excluded on the ground of the blood count. Against generalized sarcomatosis speaks the distinctly benign character of the affection.

Further observation of the case for a period of many months strengthened in every way the original diagnosis of multiple benign sarcoid.

Treatment.—A variety of measures, both local and constitutional, were employed in the treatment of the patient.

Roentgen rays were used over many of the lesions, and while there resulted a marked reaction, the effect seemed slight and nowhere was there a complete involution.

Mercurial plaster and various salves made little impression.

Freezing with carbon dioxid snow, which was practiced on a number of the tuberous lesions, caused a violent reaction, followed by an almost complete disappearance of the same.

Radium was consistently applied to a few selected small tumors, with moderately beneficial effect.

Arsenic was employed both internally and by way of injection. At first clarson was used in large doses for several weeks; then Fowler's solution in increasing strength, both without much apparent benefit. Only the intravenous injection of sodium cacodylate, used in weekly intervals for several months, seemed beneficial. But while the patient at the present time (June 1, 1915) is greatly improved, particularly as far as the facial appearance is concerned, he seems far from a perfect recovery.

The case was presented before the Chicago Dermatological Society at its annual meeting last January, where the unusual picture was commented on and the diagnosis concurred in by most of the members.

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ABSTRACT OF DISCUSSION

DR. RICHARD L. SUTTON, Kansas City, Mo.: A few years ago I had an opportunity to make a differential study of Boeck's sarcoid and subcutaneous tuberculosis. In addition to sections from my own cases, Dr. Udo J. Wile was kind enough to loan specimens from three cases of Boeck's sarcoid which had previously been studied by Dr. George Henry Fox and himself, and Dr. Wende's preparations from his rare case of nodular tuberculosis of the hypoderm. At that time I concluded that the disorders which Darier has placed in the so-called "Sarcoid Group" may be separated into two distinct groups; (1) true sarcoids: Boeck; Spiegler-Fendt; (2) subcutaneous tuberculosis: Darier-Roussy; Wende. The first two are probably separate and distinct diseases; the last two are probably identical, and bear no relation whatever to the true sarcoids. Therapeutically, true sarcoids respond favorably and fairly promptly to arsenic, a drug which has little or no effect on tuberculous lesions. I think those two facts alone separate and identify them from the tuberculosis group.

Tuberculosis Immunity.—Gilbert and Webb in a paper read at the Seattle meeting of the National Association for the Study and Prevention of Tuberculosis say that human tubercle bacilli possibly vary in virulence in different patients. Ten bacilli have been found sufficient to infect a guinea-pig in some instances, and in others 100 have been found necessary. The addition of emulsion of blood platelets to minimum deadly doses or the addition of lymphocytes or mononuclear cells from the peritoneal cavities of tuberculous guinea-pigs does not constantly prevent infection. They say immunity in animals may be obtained by the injection of increasing numbers of tubercle bacilli, beginning with one or two and cautiously increasing the number from a culture the minimum fatal dose of which is about 100, or by the injection of, say, 100 or 200 bacilli of a virulent culture to cause a local lesion which can be cut out, preliminary precautions having been taken to prevent the spread of infection.

CHRONIC INTESTINAL STASIS WITH INFECTION FROM A SURGICAL POINT OF VIEW*

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Patients with chronic intestinal stasis with infection who reach the surgeon, have, as a rule, exhausted the ingenuity and patience of the family physician, the gastro-enterologist, the neurologist and even the oculist. They have been victims of the patent medicine habit, and have tried all the isms and pathies in medicine. They may have resorted to a change of climate and some of them even to a change in religion. During their dreary pilgrimage many of them have acquired surgical experience, including, perhaps, as some one has aptly said, "mobilization of most of their fixed organs and fixation of most of the movable ones."

In dealing with one of these patients it is important to know whether, prior to the development of the present illness, he or she was a comparatively normal individual, as rarely happens, or, as is usually the case, a neurotic subject with deformed body, and viscera presenting wide variations from the average normal in position, size, structure and function. The previously healthy individual whose illness has its origin in some serious constitutional disease, or is due to a break in the general health from some other cause, such as a severe infection of the intestinal canal, perhaps involving the appendix, is not likely to require any more serious operation than an appendectomy, or, possibly an appendicostomy to allow complete flushing of the bowel. The tendency in such cases is to recover under good management. They present no very serious problem. In considering intestinal stasis from a surgical point of view, therefore, we are concerned almost exclusively with physically deformed patients whose nervous systems are unstable and who suffer from a general visceroptosis and who show in varying degree the evolutionary bands, kinks, folds and membranes about the terminal ileum and colon concerning which so much has been said. These individuals, of course, present a lowered resistance to morbific influences in general, and are unable, except under favorable conditions, to withstand the ordinary wear and tear of life.

In spite of gross abnormalities, the colon and terminal ileum, in such a case may, within reasonable limits, meet all of the individual's needs from the point of view of functional usefulness. That such is the case is amply attested by the fact that most visceroptotic persons live to old age in comparative comfort unless their feeble powers of resistance are overtaxed in some way, as for example, by severe infection, an improperly balanced diet, or prolonged mental or physical strain. Constipation, from which most of them suffer, of course, predisposes to infections in the intestinal canal, yet a vast majority of these patients apparently suffer no ill effects from constipation even when their bowels are not emptied more than once or twice a week. The constipation, per se, does not seem to make the patient ill.

The dire results said to be due to downward dragging of a displaced and overloaded colon and terminal ileum on the mesentery, in cases of visceroptosis, are probably greatly exaggerated, for the reason that the weight of the abdominal viscera is not supported by their mesenteric attachments.

It seems probable that the constipation, the atony and distention of the cecocolon and the stasis in the terminal ileum from which these patients suffer, are all the result of imperfect development of the musculature of the bowel, mobility and displacement of the cecocolon, and a defect in the nervous mechanism which controls the intestinal movements.

It has been suggested by E. A. Barkley, A. F. Hertz and others that the deformed, atonic, distended and displaced cecocolon is unable to supply the muscular contraction necessary to make the constriction point or temporary sphincter at the junction of the cecum and ascending colon, which normally forms during the occurrence of a general peristaltic wave, and by thus holding the back pressure, prevents regurgitation, and that as a result of the defect, these patients suffer from back pressure and stasis in the terminal ileum and cecum. However this may be, it seems that the individual does not suffer any ill effects from constipation until the walls of the colon or ileum have, from some cause, become infected. Even in the presence of infection it is not likely that the patient's health will be seriously broken unless the local immunizing mechanism of the bowel wall is overcome and the protecting influence of the other body defenses, such as the liver, spleen and glandular system, has been impaired by some cause, which may not necessarily be directly associated with the bowel condition.

Many of these patients, after they have been infected, in time reach a point where they can be helped only by surgical means. It is a problem to decide when they have reached this stage.

Surely the mere fact that an individual is the possessor of deformed and displaced viscera does not mean that he is a subject for surgery as soon as he becomes ill from the results of intestinal infection, nor does the fact that he suffers from obstinate constipation, associated with intestinal infection and toxemia, mean that he is beyond nonsurgical help. The study of the history will show that he has been constipated all his life, and that never until the development of his present illness has the intestinal stasis seemed to cause any serious trouble. Furthermore, investigation will often show that in the immediate family there are other individuals of the same type who also suffer from constipation and yet are about as well as neurotics can expect to be. The fact that the family physician has not properly understood the problem this case presents, and has therefore not obtained a good result, does not prove that the patient requires a surgical operation, and lastly, the mere fact that the patient has become demoralized and demands an operation should not influence us.

Surgical interference should be avoided in these cases as long as possible. Fortunately, much can be done for them by nonsurgical means, but they are preeminently institutional cases and require careful study and prolonged treatment. Many of the most markedly deformed and visceroptotic and apparently hopeless patients can, as J. E. Goldthwaite suggests, be cured by braces, posturing, massage, exercise, stimulating, bathing, etc. They can be relieved of intestinal stasis and from the infection, and be made comparatively strong, well-poised and vigorous. A voluminous laxative diet and the intelligent use of

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

psychotherapy will produce regular and normal bowel movements and great improvement in a surprisingly large number of cases. Strapping of the abdomen for support, or the use of close-fitting, well-constructed corsets with abdominal pads, will solve the problem caused by diminished intra-abdominal pressure and compensatory dilatation of the abdominal blood vessels, as suggested by E. Schulz. Frequent colon irrigation and the liberal use of paraffin by mouth and by rectal injections left in the bowel to be carried to the upper colon by antiperistalsis, are useful. Dilatation of the rectum and sigmoid is to be employed in cases in which there seems to be a tendency to obstruction in the lower bowel.

It must be borne in mind that in many cases the enteroptosis and intestinal stasis and infection are not the sole cause of the patient's ill health. For example, some are suffering from unsuspected syphilis or other constitutional disease. Cases of intestinal stasis with infection and toxemia are primarily not surgical cases and if properly treated, very few need ever become surgical. It seems that in the treatment of these cases we are going through another surgical fad period that will end as did the oophorectomy craze, the nephropexy mania and the round ligament round-up.

There are, of course, some cases in which surgical interference offers the only hope, and in these cases the selection of the surgical procedure to be employed is of the utmost importance.

There doubtless are cases in which a colectomy, either complete or partial, offers the only possible hope for relief. It is likely, however, that if these operations were reserved for cases that could not be helped by any less radical means, the results would be disappointing.

In considering short-circuiting operations we must bear in mind that we are dealing with a problem in physiology and not one of simple gravity or plumbing. Colon stasis and infection are not always relieved by such an operation, and ileum stasis and regurgitation are apt to be increased. This work is still in the experimental stage. To be sure, there are many reports testifying to brilliant results, but certainly the number of these does not yet equal the enormous number of cures formerly obtained by kidney fixation, kidney decapsulation, round ligament suspensions, removal of the ovaries and many other surgical triumphs of the recent past. Already warnings against useless mutilation of the intestinal tube are coming from every section of the country, where the end results of short-circuiting operations are being observed.

The ideal operation in these cases must, of course, be one that will secure easy and complete emptying of the bowel, thus relieving the toxemia; it must relieve the back pressure and reflux into the ileum; it must provide a means for the treatment of the infection; it must effect a cure of the chronic appendicitis; it must avoid any unnecessary mutilation that will destroy the future functional usefulness of the colon and ileum.

To accomplish all this, the distended, atonic and displaced cecum must be restored to its normal position and fixed there. It must be reduced to its normal size and some means provided by which infection in the entire colon and terminal ileum can be treated, and by which back pressure can be relieved. If the bowel is obstructed by bands of either evolutionary or inflammatory origin, these must be removed. Blake's method for reefing the cecum down to normal, and Wilm's plan for fixing it in position, do not meet all the indications for the reason that the cecocolon is still atonic, its walls infected and in no condition to withstand back pressure, or to offer any adequate assistance to the forward movement occurring during peristalsis. A simple appendicostomy, even when done in addition to a reefing down and fixation operation on the colon will not do, for the reason that the tendency of the cecum to a downward displacement stretches the attachment made by the appendix to the abdominal wall, and allows the anterior and external wall of the cecum to bulge forward again, and soon the cecum is out of its fossa and in the pelvis.

All indications for surgical treatment in these cases seem to be covered by the following very simple procedure, which it has recently been my practice to follow:

Through a long right rectus incision the entire colon and terminal ileum are carefully freed from adhesions or bands that seem to threaten obstruction. The cecocolon is pleated down to normal by Blake's method, and the appendix, with, if possible, a tent-like portion of the cecum around its base, is drawn up into a large stab wound so placed that the cecum is *firmly fixed* in the abdominal wall. The parietal peritoneum is dissected back from the margins of the stab wound to make sure of a firm fixation. The base of the appendix being well up in the wall, it is possible to dilate the lumen until it will admit a large catheter through which the bowel can be rapidly flushed and through which the fluid remaining after flushing can be siphoned off. By this plan we (1) overcome obstruction; (2) replace the cecocolon; (3) reduce it to normal size; (4) fix it in position; (5) provide a means by which back pressure on the atonic bowel wall can be relieved; (6) provide a means by which the infection in the bowel can be successfully dealt with, and (7) dispose of the diseased appendix.

This method is simple and free from risk, and, while it perhaps presents nothing very new, it at least has the merit of seeking to preserve the functional usefulness of the colon and the ileum.

CONCLUSIONS

1. In considering intestinal stasis from a surgical point of view, we are concerned almost exclusively with neurotic and visceroptotic subjects who are unable, except under the most favorable conditions, to withstand even the ordinary wear and tear of life.

2. Obstinate constipation and lowered resistance predispose these patients to infection, which, however, may not do serious harm unless the local immunizing mechanism of the bowel wall and the protecting influence of the other body defenses have been overcome.

3. Cases of intestinal stasis, even though infection and toxemia are present, are primarily not surgical cases, and if the patients are properly treated, very few need ever become surgical. They are, however, preeminently institutional cases and require prolonged and careful treatment.

4. No operation that will destroy the future functional usefulness of the bowel should be done in the cases that can be helped only by surgical interference.

5. The cases which colectomy, either partial or complete, seems to relieve for a time, could probably be relieved permanently by much less radical means.

6. Short-circuiting operations are, as a rule, to be condemned. These operations are still in the experimental stage and the number of brilliant results apparently obtained, do not yet equal the number of "cures" formerly reported from kidney fixation, removal of the ovaries and other now discredited surgical triumphs of the past.

7. The ideal operation must: (1) secure easy and complete emptying of the bowel; (2) relieve back pressure, and reflux into the ileum; (3) provide a means for the treatment of the infection; (4) effect a cure of the chronic appendicitis, and (5) preserve the functional usefulness of the colon and ileum.

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ABSTRACT OF DISCUSSION

Dr. J. N. Jackson, Kansas City, Mo.: As a result of interest inspired by Metchnikoff and the doctrine of Lane, has come our interest in this field of surgical endeavor. I believe no one of experience or intelligent observation has reached the stage in which he is willing to declare that any fixed decision of this matter has been made. We are going now through a stage in which there are some factors of progress, and, on the other hand, there are some things we do not know and which we must be careful in coming to a conclusion about. We must be conservative in dealing with these cases of intestinal surgery. We know more about the physiology of the colon, and it must be dealt with as a piece of mechanical plumbing. We may have colonic stasis from several different fundamental conditions. We have a certain class of cases in which the defect is in the nervous mechanism of the individual, which defect is inherited, and it is impossible for any one by mechanical means to alter it. There are classes of cases in which the trouble is due to a primary and mechanical obstruction to the outlet of the intestine, and I have found many cases in which there was a positive mechanical interference with the action of the colon. I have seen a true toxic condition without any interference with peristalsis. There are classes of cases in which there is a positive derangement of a toxic type. We find cases of old chronic appendicitis in which the person never had an acute attack, with a raised leukocyte count, etc., and after the appendix has been removed we have seen the most remarkable transformation of the person. A great many acute surgical conditions of the appendix become surgical because of the inability of the appendix to expand and supply blood to take care of the nutrition of that part, and we have chronic appendicitis. There are many cases in which we have chronic septic infection of the colon. Are they suffering from intoxication or infection? I think there are both types of cases. Ordinarily they can be recognized by the history. The cases of septic infection are the doubtful cases, and I believe that surgery should not be applied in any condition in which we can get results from conservative methods, by internal medication, etc. It might not have been fully demonstrated that these cases are of chronic septic infection of the colon; then anything done to the outside is going to do good. We must do something to get rid of the infected segment of intestine. We are dealing with a class of patients who have been sufferers from a medical standpoint, and who will ultimately yield to some surgical measure.

Dr. Robert C. Coffey, Portland, Ore: In 1906 I reported in The Journal a case of severe intestinal stasis as having been cured by ileosigmoidostomy. A year later I had to remove the colon because of reverse peristalsis into the cecum. A year later the patient came back and wanted the rectum taken out. A friend of mine circumcised him instead and claimed he produced a cure. Since that time I have done a good many operations of the colectomy type and some few of the short circuit type, but have come to the conclusion, by seeing a considerable number of these cases both from the medical and surgical standpoint, that any operation which involves the opening of the lumen of the intestine is to be avoided except in very rare and extreme cases. From Dr. Jones, my partner, we have learned that most of these cases can be cured without any surgical interference, by proper dietary and forced feeding treatment. In postoperative Roentgen-ray examinations of these patients who have been short circuited for true intestinal stasis, there has been reverse peristalsis, later requiring removal of the colon. The normal patients who have been short circuited for ordinary habitual constipation do not need removal of the colon and do not have reverse peristalsis. There are a number of patients whom we have short circuited for fistulas, high obstruction, etc. In these cases we have had no backing up into the cecum. We have noticed that the ileum is always dilated following the short circuiting operation, whether it has been cut off from the cecum or not. When we have operated the second time in cases in which the cecum and first half of the transverse colon had been removed at a previous operation, we have always found a dilated ileum and in some cases fecal matter extending up into the ileum three feet or more. There is undoubtedly a difference of intestinal pressure in the large and small intestines, and the ileocecal valve is of importance. While we have brilliant results in some cases after short circuiting or colectomy, we find we must follow our surgical methods up by medical treatment and by regulation of habits and diet. As soon as normal intra-abdominal pressure is established, followed up by hygienic measures, most cases of stasis are relieved without any surgery at all. They cannot be handled in the private home and hospital; they must be handled by specially trained people. We have had a few cases which have not been cured by medical means before operation, but which have been cured by the same means as soon as the hepatic flexure and first part of the transverse colon had been replaced and held by sutures. They do not need a short circuiting operation or colectomy of any kind, except in very rare and exceptional cases.

Dr. Rea Smith, Los Angeles: I wish particularly to indorse the statement of Dr. Russ that most cases of intestinal stasis are medical, and I agree that operation should be reserved for the medical failures. I want here to make a plea for a better understanding of the indications for short circuit. When anyone mentions short circuit and colon constipation in the same sentence he is making a mistake. Short circuit of the ileum is designed to relieve stasis in the ileum and will have no effect on stasis in the colon (or constipation). When you deal with stasis in the small intestine you must drain the ileum in order to get rid of toxemia, and if the colon evacuates itself every day before operation it will continue to do so afterward. You cannot, however, expect to relieve colon stasis, which is constipation, by a procedure designed solely to drain the ileum, and if marked constipation exists before short circuit it will probably continue afterward.

Concerning fixation of the cecum, we have found that when the cecum and ileum are prolapsed together and movable, the resulting stasis can usually be cured with a properly fitting corset. Any stasis in the ileum and cecum that can be controlled by mechanical supports does not need surgery, and these results are more brilliant than the surgical ones. When the cecum is bound down by adhesions it is much more difficult to lift the prolapsed ileum with a mechanical support than when both cecum and ileum are freely movable. I rather doubt the wisdom of fixing the cecum unless something is done with the prolapsed ileum at the same time, as I think it would be more likely to cause stasis in the ileum than cure or prevent it.

Dr. F. W. Rinkenberger, Los Angeles: After some time spent with Mr. Lane in 1911 I could not believe all the ills of the human body are caused as he believed. I took a series of healthy young men and demonstrated with the Roentgen ray absolutely the same pictures as he was showing as stasis. This report was never published. Now remembering that the stomach is a movable organ and the colon also, I have never convinced myself it was proper to operate where an obstruction was not demonstrable to the eye, any more than in the past to operate on so-called mucous ulcers of the

stomach when they could not be demonstrated. Most of these persons have what I call unstable nervous systems, and no matter what you do for them they are like cases of epilepsy which are reported cured, but come back. I believe that the great majority of cases of short circuiting are rarely justified.

DR. JOHN WILLIAM DRAPER, New York: In collaboration with my associate, Dr. J. M. Lynch of New York, I made a careful study of the cecum and the ascending and transverse colon in thirteen human specimens, and it may be of value to this section to know what were the anatomic and microscopic findings in these cases. Without going into detail, I will say in the first place that we found the arrangement at the ceco-ileac junction to be very similar in all cases, in that the mesenteries were all of the nonfused type, being unusually long and common to both the small and the great intestine. In some cases there were other variants which could be ascribed to heredity. We were unable to find any means of discovering these anatomic conditions before opening the abdomen, but perhaps later on the Roentgen ray will give some further assistance along this line. Microscopic conditions were interesting: three of the cecums showed almost entire absence of mucous membrane; three showed well-defined papillosis, and in all, the musculature was very much attenuated. Not a single one corresponded to our conception of normal. The defensive mechanism was evidently greatly weakened. These cecums were large and of the herbivorous type. In contradistinction to the cecocolons of this type, we believe that the terminal colon is of very great importance to the economy. Some experimental work in the lower animals which we have done has shown that it plays an important part in the excretion of certain poisons, some of which, as in acute intestinal obstruction, are undoubtedly liberated by the economy itself. While it may be true that the cecocolon may and probably does under normal conditions take active part in water absorption, and to an inconsequential degree in food absorption, these functions are easily vicariously assumed by the terminal ileum. This we have proved by animal experimentation and by the study of six ileostomies made in human beings. We therefore feel that total colectomy should be avoided on physiologic grounds, except in certain very rare instances. The individuals in which we did the partial resection of the cecocolon were all human derelicts and had been treated medically for many years before operation.

DR. ROBERT T. MORRIS, New York: Most of these patients who are subjected to the short circuiting operation are patients who should have had their ancestry short circuited by one or two generations. You are dealing with a class in which there are many other stigmata; you are dealing with patients with defective ductless glands; with patients who do not maintain a proper balance between their organs. You have in these cases an example of the fact that function is closely associated with structure. Many of these patients are "cured" by the various cults, and you have brilliant results no matter what you do if only you report your cases quickly enough. The fact is that these patients are very amenable to suggestion, and suggestion is potent in helping for the time being in restoring the tone and balance of the innervation of the enteron. We are going to have more and more of these cases for the reason that our nation is approaching cultural limitations. In the history of evolution every former nation has reached cultural limitations and then declined. We begin to have certain anatomic defects classified as stigmata associated with a psychology which is the expression or manifestation of the anatomic defects. These cases, many of them, are really cases for surgery for the reason that we often have a secondary group of toxic manifestations which are amenable to surgery. We now know from our study of focal infections that a focal infection in the colon may give rise to distant effects. It is merely a question of properly making an analysis, and in the cases in which the focal infection may actually be located in the colon, the patient may be relieved by some of our resources, either medical or surgical, which will allow us to gain control of that feature of the case.

In regard to adhesions, many of them are due to toxins, with distant manifestations. We have adhesions which require surgery sometimes. Lane and I happened to publish our studies on these subjects in the same year, 1903. His paper appeared in the London *Lancet* and mine in the *Medical Record*, but Lane received most of the attention, because his kink was where it was easily observed. The cobwebs up in the attic of the abdomen which I described are worthy of attention, which will be given them in due time. These cases are more often medical than surgical; but do not neglect the surgical features.

DR. W. B. RUSS, San Antonio, Tex.: The so-called neurasthenic patient who suffers from a general visceroptosis and obstinate constipation presents a lowered resistance to morbific influences in general. Infection originating in the bowel wall may, if neglected, result in a condition that will require surgical interference for the purpose of securing easy and complete emptying of the bowel, the relief of back pressure, for providing a means for the treatment of the infection, and for curing the chronic appendicitis from which they all suffer. No operation should be employed that will destroy the future functional usefulness of the colon or ileum. The simple method I propose seems to meet the indications.

ILEOCOLOSTOMY AND COLECTOMY FOR ARTHRITIS DEFORMANS *

REA SMITH, M.D.
LOS ANGELES

The limited number of successful results obtained in the treatment of arthritis deformans by less radical measures than an intestinal operation has prompted me to report this small series of cases. For the last two years I have been studying from the point of view of Sir Arbuthnot Lane, all the cases of chronic arthritis which have occurred in my practice, and have followed Lane's method of treatment in a number of them.

Briefly stated, Lane's theory is that intestinal stasis, with a resulting toxemia, lowers the general resistance and makes possible the microbic invasions which cause chronic arthritis, and that the relief from toxic absorption attendant on perfect intestinal drainage is followed by increased resistance on the part of the patient, with a disappearance of the infection.

I have had the opportunity of examining with the fluoroscope eighteen cases of arthritis deformans and in each case have found a marked ileal stasis, usually associated with a dilated, prolapsed cecum and evidence of colon stasis as well.

While Lane's theory regarding the formation and absorption of toxins from the small intestine is undoubtedly right, Rosenow's work on the transmutation of streptococci has suggested to me the possibility that we might also find the portal of entrance of the invading organism in the intestine, and that the head infections were merely local evidences of the same general infection that was present in the joints, especially as the clearing up of these infections, by removing tonsils and pulling teeth, has not been attended with the striking results it promised when first suggested.

The terminal ileum is the natural habitat of the *Streptococcus viridans*[1] and it seems more logical to look for its portal of entrance into the blood stream through the wall of an intestine, congested, edematous

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Schottmuller: Handbuch pathogenischer Microorganismen, iv, 467.

and continually filled with culture mediums, than to go out of our way to find some obscure and less obvious source of infection. We have made bacteriologic examinations of the walls of the ileum and colon in two cases, and of the ileum alone in a third. The mucous membrane was stripped off, the wall macerated and cultures made. In the first case we obtained a growth of *Streptococcus viridans* from both ileum and colon. In the ileum the *Streptococcus viridans* was the predominating organism, while in the colon the *viridans* colonies were more scattered. In the other cases we grew a hemolyzing streptococcus in each instance. Cultures from the walls of three other colons, removed for other causes than arthritis, showed no *viridans;* two of them showing a hemolyzing streptococcus.

Before presenting this report I wish to say that no operations have been performed in borderline cases. These patients have been through all the modern lines of treatment, by medicines, vaccines, baths and electricity, as well as removal of tonsils and, in some instances, pulling of teeth, with no more than transient good effect, and were in each instance willing to accept any operative form of treatment, no matter how serious, which held out even a chance of staying the disease and lessening the pain.

In the typical case, following ileocolostomy the pain in the joints disappeared in less than forty-eight hours, and the movement of the joints returned up to the point of limitation by contracted muscles. The crepitations disappeared day by day until, at the end of three or four weeks, old dry creaking joints moved as freely and quietly as if they had never been infected. This condition, which was so encouraging to both patient and surgeon, was followed by a recurrence of the joint symptoms in more than half the cases, as I will show in my detailed report. In the recurrent cases the removal of the colon down to the point of anastomosis was again followed by the disappearance of all joint symptoms, and while some of these patients have had joint pains, but one of them has returned to the former condition of helplessness.

I have operated in fourteen cases. In two I did ileocolostomy and colectomy at one operation; both patients made good recoveries from a surgical point of view and were markedly benefited from the point of view of their disease. Of the remaining twelve patients on whom short-circuiting operations were done, one died on the fifth day of uremic convulsions, having passed no urine for seventy-two hours. This, the only mortality in the series, should be attributed to bad judgment in selecting the case for operation rather than to the surgery itself. The patient had nephritis, was bedridden with arthritis deformans, and was operated on as a last resort, both patient and surgeon realizing the chances that were being taken. Of the remaining eleven patients on whom short-circuit operations were done, five made good recoveries, the joint symptoms disappeared and three of the patients were able to resume their occupations with little or no pain and much less disability than it would seem possible from their previous condition.

One, a girl of 26, was operated on at the County Hospital at the meeting of the Southern California Medical Society in November, 1914. This patient, who had had arthritis since she was 4 years old, and was a helpless cripple, unable to move from her wheel chair, is now earning her living as a child's nurse.

The remaining six patients all made an early improvement, which was only temporary, and returned to their former conditions within a few weeks. Four of these patients have since had a secondary colectomy. One case has turned out a failure, the patient being no better now after six months than she was before the original short circuit, with the single exception that an obstinate constipation has been relieved. Recent roentgenograms of this patient show a marked eighteen-hour stasis still existing in the ileum, evidently from a narrow anastomosis due to adhesions, as the opening was patulous at the time of the secondary colectomy. Of the remaining three patients on whom colectomy was performed, two were bedridden, and the third was on crutches at the time of the secondary operation. All are now greatly improved; the disease has been arrested, and in each case the patient is able to walk without assistance. Of the remaining two patients with short-circuits, who have relapsed to their former condition, I can make no further report until they have their colons removed. I shall include them, however, in the list of cases receiving no benefit, hoping that a supplementary report may place them on the other side.

I have then to report fourteen patients with twelve ileocolostomies, two ileocolostomies with accompanying colectomy and four secondary colectomies, with one death, a mortality of 7.15 per cent. The disease has been arrested, and the patients have been cured or greatly benefited in ten of the remaining thirteen, making 76 per cent., or ten of the series of fourteen, making 71 per cent. In no case in this series have there been any of the ill effects of the so-called bad mechanics of which we hear so much in all discussions of Lane's work. There has been no case of persistent diarrhea, and no persistent backing up into the blind pocket of the colon causing impaction, and no development of a giant ileum.

I am convinced that by a careful analysis of the intestinal condition, as shown by repeated roentgenoscopy before operation, it is possible to avoid impaction of the colon after short circuit. The success of short circuit depends on proper understanding of the mechanics and physiology involved and careful selection of cases. If any obstruction exists in the colon between the cecum and the point of intended anastomosis this obstruction must be relieved or the colon removed. Impaction of the colon depends on interference with normal peristalsis and will not develop in the side-tracked segment if it is freely open. The fluid contents of the ileum easily pass back to the cecum through a narrow colon, where the fluid is absorbed and the residue is unable to return. The short circuit of Lane is designed to relieve a partially obstructed ileum, and is not to be used to correct an obstruction in the large bowel. If it is so employed, it will surely be followed by a bad mechanical result. It has been repeatedly shown by various men that any fluid thrown into the terminal segment of the large bowel will be carried immediately to the cecum by reverse peristaltic waves. Here the fluid is absorbed and the presence of the residue excites the normal peristaltic waves which carry it back to the lower segment or container. This is precisely what happens after short circuit, and there will be no difficulties with either diarrhea or impaction of the blind pocket so long as the colon is unobstructed. I am satisfied that the ileal contents in all *successful*

short-circuit cases back up into the blind pocket, and the only ones that get into trouble are those with a partially obstructed colon from which the solid residue cannot return.

CONCLUSIONS

1. The portal of entrance of the streptococcus, in all the cases of chronic arthritis that I have had an opportunity of studying, is the ileocecal coil; and the stasis in the terminal ileum is the predisposing cause.
2. Drainage of the ileum will cure this infection in a large proportion of cases. The colon will have to be removed as well, if the cecal walls have become infected.
3. The operation as described by Lane is a proper surgical procedure, not necessarily attended with an undue percentage of bad postoperative sequelae, if done in properly selected cases.
4. The operative mortality is not prohibitive.
5. That ileocolostomy or colectomy will effect a cure in a higher percentage of cases of arthritis deformans than any other method of treatment heretofore suggested.

Brockman Building.

ABSTRACT OF DISCUSSION

DR. J. F. PERCY, Galesburg, Ill.: There are two things in this paper that should be noted. First, that infections of the teeth and tonsils may be intestinal in origin and that these easily recognized local conditions may only be a part of a general infection of which arthritis deformans is the most serious expression. Second, the author tells us that he has had no persistent backing up into the blind pocket of the colon causing impaction and no development of a giant ileum. This statement is important because the knowledge of this sequel to an ileocolostomy has made many surgeons hesitate to follow Mr. Lane in his advocacy of this operation. The author also tells us that in order to avoid this impaction there must be no obstruction between the cecum and the point of intended anastomosis; that if there is, the colon must be removed. This point, if true, and we have no reason to doubt it, is most important. In other words, if normal peristalsis is not interfered with, the colon will not become impacted. This simply means that in doing this operation we should see that not only a previously existing obstruction to peristalsis is not left uncorrected, but that our method of operating does not interfere with the physiology which permits the liquid contents of the bowel to pass into the colon in order to be deprived of its water, and when so altered to pass out again through an unobstructed channel. Lane's short circuit, therefore, will relieve a partially obstructed ileum but has no place in an attempt to correct an obstruction of the large bowel.

While visiting Rollier's Sanatorium in Leysin, Switzerland, two years ago, I was greatly impressed with his end-results in what we have heretofore considered utterly hopeless tuberculous joints. His exposure of these joints and of the whole body to sunlight and the open air cleared them up even when involved in secondary infections, and with a movable joint, in a most astonishing way. If this type of tuberculous joint infection will yield to appropriate treatment and become practically normal in function, I am ready to believe that the essentially ankylosed joints of arthritis deformans can again be made movable as is most strikingly shown by the patient exhibited here. This is a subject that will not down. We are all convinced that there is something to it. What we need are papers such as this one and others on the program of this meeting to clear up what is obscure in meeting the indications, not only of technic, but of physiology as well.

DR. M. CASPER, Louisville, Ky.: Did any of these patients have Lane kink or adhesions?

DR. REA SMITH, Los Angeles: Almost all of these patients were operated on before and had marked adhesions and distinct bands. The patient whom you have just seen had three loops of ileum bound down to the stump of the uterus, which had been removed a number of years before. I have one patient now, being treated with a support, who has as marked a stasis as you saw on the screen, but in whom the intestines are all movable; she has had the same results as though operated on, because she is now getting thorough drainage of the ileum.

LUPUS ERYTHEMATOSUS OF THE MUCOUS MEMBRANES*

GEORGE D. CULVER, M.D.
SAN FRANCISCO

The cutaneous lesions of lupus erythematosus are so deforming that they occupy the attention of both the physician and the patient to the exclusion of the manifestations of the disease on the mucous membranes. Furthermore, the lesions on the mucous membranes, although generally erosions, and therefore raw surfaces, do not usually give the same discomfort as do, for instance, herpes or mucous patches, and the patient rarely draws the physician's attention to them. They are important, however, as giving one an insight into the nature of the disease as being something more than a mere local cutaneous affection, and they are also important because it is occasionally necessary to differentiate them from other affections of the mucous membranes, especially those occasioned by syphilis. The following eleven cases show lupus erythematosus in seventeen locations on the mucous membranes:

Case 1.—A woman, aged 38, consulted me, July 23, 1909, on account of a lupus erythematosus that had appeared three years previously over the right malar eminence, and that had disappeared, leaving only a slight capillary dilatation but no scar. Just below this, however, there was a scar, the result of another eruptive patch. Other patches had appeared over the frontal eminences and had vanished, leaving almost no trace.

When she consulted me there were six patches on the face, one on the vermilion border of each lip, and two in the right cheek pouch and one in the left. The lesion on the nose was fungating and bled easily; the others were bright red, of irregular shape, and were level with the surface. Besides this the face was mottled with a dirty yellow pigmentation, and she looked in wretched health. The two red superficial erosions in the right cheek pouch and the one in the left were persistent, and at times they became very red and angry looking.

Two months before consulting me she had had a severe carbuncle on the right temple, showing she was subject to streptococcic invasion. Furthermore, shortly before, a baby had scratched her under the right eye, making a wound which was a number of months in healing. There was a history of much tuberculosis in the family, although her immediate relatives, such as her father, mother and sister, were not affected with this disease.

Her tongue had a thick, grayish-yellow coating, and there was some indican in the urine. She slept wretchedly and she suffered from cold hands and feet. For months before the eruption appeared and during pregnancy, she used to take milk excessively: two quarts at night, and large quantities during the day, to the exclusion of almost all other food.

Case 2.—A religieuse, aged 26, consulted me, May 8, 1912, on account of a most extensive and severe lupus erythematosus of the sides of the nose and of the cheeks. The scarring was typical. She said that three and one-half years previously

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two scaly spots had appeared, one on each side of the cutaneous surface of the upper lip. After this an eruption broke out on the inside of the upper lip, forming a running sore. The lip was then so out of shape that she could not speak, and the gums had a white coating.

When she came in, the inside of the upper lip was red and inflamed, the gums were retracted in some situations, redundant in others, and gingivitis was present. The lower lip was prominent, bright red, injected, and frequently had the appearance described by William Dubreuilh[1] of being coated with collodion. During the exacerbations of the lupus erythematosus, of which she had many, the lips, especially the lower one, burned and became intensely inflamed. The exacerbations were intimately associated with disturbances in the general health. At such times the mucous glands emptying on the inner surface of the lower lip swelled and became prominent as rounded elevations. At times a herpetic eruption resembling "cold sores" appeared in this situation, and the gums would redden and feel "feverish." Occasionally raised red blotches appeared on the mucous membranes of the lips. When the blotches were examined with a lens they showed a beautifully characteristic structure. They were about 0.5 cm. in diameter and slightly raised in a pincushion form. There was a central erosion, and the rounded border was convergingly striped with bright red capillaries. The epithelium covering this border was faintly opalescent. At one time, Feb. 19, 1914, there were three such lesions, each about 0.5 cm. in diameter, on the red of the upper lip, and one on the lower.

This patient was an irregular, rapid eater. She took much sweet food, potato and cheese. She had a heavily coated tongue and suffered from marked gastro-intestinal symptoms, such as flatulence and distention after eating, sour stomach and constipation. At times she had a ravenous appetite. She also had occasional right-sided headache. The conjunctivae were frequently yellow. As is common in gastro-intestinal intoxication, the whole cutaneous surface was congested with blood. Whenever the general health deteriorated the lesions became much worse. For instance, when she tried to keep Lent, it reacted very badly on her general health and on the lupus erythematosus. The edges of the eyelids were red and sore, resembling blepharitis marginalis.

April 14, 1914, on being examined the mouth revealed three lesions in the right cheek pouch, and one in the left. These did not cause discomfort. In each of them there was a bright red central line, surrounded by an opalescent area, which in turn was situated in a bright red field. All these lesions were above the interdental lines and were not near any roughened harsh surface, as roughened or sharp-edged teeth, such as might have caused an erosion.

The patient told me that at one time it was thought she had tuberculosis. I never found evidence to that effect while she was under my observation.

Case 3.—An unmarried nurse, aged 42, consulted me, Jan. 29, 1914, for an eruption which had appeared one year before, following sunburn at the seashore at Santa Cruz. There was an irregular light red telangiectatic patch on the left cheek; an irregularly contoured, light red desquamative patch that included the chin and lips and that contained many milia-like bodies; some irregularly contoured, light red, desquamative patches on the right cheek near the eye, and two patches near the right angle of the jaw that were doughy, telangiectatic and simulated an eczema.

There was a red patch with a central erosion, and a surrounding opalescent color in the left cheek pouch. This patch was not circular, but stretched forward along the interdental line. Below this there was an opalescent patch without erosion.

A diagnosis of syphilis had been made on the evidence of the lesions themselves, without any other evidence whatever, and the patient had received two intravenous injections of salvarsan in the previous May and June, followed by hypodermics of sublimate and inunctions of unguentum hydrargyri, with, of course, no result.

She suffered from quite marked gastro-intestinal disturbances, had flatulent dyspepsia, and there was dilatation of the stomach and clapotage. She also suffered from constipation, and much gas in the bowels, and the physical examination of the abdomen showed the intestines markedly dilated with gas.

Case 4.—June 4, 1908, a girl, aged 17, consulted me on account of a "bat wing" lupus erythematosus of the face and reddened bald patches in the scalp. She said the first appearance of the disease was on the left index finger the previous December. The eruption was preceded by a few months of irregular menstruation.

She had erythematous blotches on the roof of the mouth, and there was roughening of the upper gums far back on their inner sides, that is, the sides facing the mouth cavity.

It cannot be asserted unequivocally that the lesions in the mouth in this case were those of lupus erythematosus. It can only be said that they occurred in a patient having this disease, and that they were not herpetic or luetic, or the lesions of lichen planus or of erythema multiforme.

Her general condition was not good. She was markedly anemic, and the skin around the mouth was a dirty yellow. When she first came in her hemoglobin was 49 on the Dare instrument. She had a coated tongue, a heavy breath, and frequently a feeling as of a lump in the stomach. She was constipated.

Case 5.—A married woman, aged 26, consulted me, April 17, 1909, on account of a raised, light red, desquamating, well-circumscribed lesion that formed a segment of a ring, and was situated on the upper portion of the bridge of the nose and extended to the right. This eruption had begun two years before, when she was suffering from pains and gas in the stomach and abdomen, and when her baby was 6 months old.

On her second visit, May 1, 1909, I became aware of a right-sided rhinitis, best marked on the right side of the septum nasi. The reddened surface was sharply bounded at its lower edge, and below this sharp boundary the epithelial surface was thickened and sodden looking. There was a marked tendency for this surface to crust.

The skin over the elbows was rough, she had seborrhea sicca of the scalp, her nails were slightly brittle, and she had some acne of the chin. The patient was in fairly good health, but she suffered from flatulent dyspepsia, constipation and mucous discharges from the bowels. Her conjunctivae were tinged slightly yellow as with bile. She suffered from muscular pains in the shoulders and arms, and occasionally had temporofrontal headaches. She was anemic.

During the succeeding winter there was an exacerbation of the lupus erythematosus lesions. About some of them there appeared a bright red margin. At the same time there occurred a scattered papular eruption of the left ear shell, and some pernio-like lesions of the fingers; one of them on the back of the first knuckle of the left index finger was disk shaped. Toward spring all these manifestations either quieted down or entirely disappeared.

Case 6.—A single woman, aged 30, consulted me, Feb. 25, 1913, on account of lupus erythematosus of the left cheek and of the bridge of the nose. The patch on the left cheek had a bright red border about 2 mm. in width. Within this border the center was scaly and lighter red. The patch had been present for some months, but within the last two or three weeks a red crusted lesion had appeared on the bridge of the nose.

During the preceding summer, and previous to the appearance of the eruption on the face, she had remarked a redness of the lower lids. There was redness and thickening and some crusting of the middle two thirds of the free edge of each lower lid. This was pronounced enough to give her a peculiar expression.

Both lips were dry and scaly, and the lower lip was irritated along the mucocutaneous border. The gums were a little redundant, but otherwise in very good condition.

1. Dubreuilh, William: Ann. de dermat. et de syph., 1901, ii, 241.

The symmetrically patchy circumscribed character of the lesions on the lids, together with their permanency, would be enough to permit them to be classed as lupus erythematosus patches. The condition of the lower lip was not characteristic enough to allow making such a strong inferential diagnosis.

The patient did not complain of any trouble in the stomach at all. Her tongue was coated, and she had been constipated, but at the time of her visit the bowels were regular. There was, however, splashing in the stomach and very extensive hypertympany over the bowels. She slept well, but she had spent three weeks of the previous month in a hospital on account of nervousness.

CASE 7.—A man, aged 40, consulted me, Dec. 29, 1913, for lupus erythematosus lesions of the left side of the upper lip, left cheek, left wing of the nose extending into the nostril, left parotid region and of the inner surface of the right ear shell. The mucous membrane in both cheek pouches far back, opposite the last molars, was affected.

The affection had begun three years previously on the outer surface of the upper lip as a papule, and had gradually spread out over the left cheek and up on the left wing of the nose and into the left nostril. The advancing border of this lesion was so prominent, indurated and of such a deep red as to cause it to be mistaken for many other diseases, especially syphilis. That part of the border which ran along the mucous surface of the left side of the upper lip was quite characteristic. It was a narrow line covered with white, tightly adherent, hyperkeratotic epithelium. The area on the lip and cheek, enclosed by the border, was thickened, rough and scarred, and the upper portion was a dirty buff color. The scarring appeared to be partly due to the disease and partly due to wounds made in extirpating pieces of skin for microscopic examination. The lesion over the left cheek was a large dusky red raised papule with a depressed center. The lesion in the hollow of the left ear shell was covered by a hard, horny, yellowish plate of thickened epithelium, with a pitted surface. All the skin lesions were very tender.

The lesion in the right cheek pouch opposite the last lower molar consisted of a number of soft, smooth, rounded elevations which were not indurated. This field was sharply bounded above by a white line where it came against the healthy mucous membrane. The patch in the left cheek pouch was slightly reddened with no definite border, and there was frequently in this situation, where the mucous membrane was reflected on the gums, a leukoplasia-like whitening of the surface and occasional cracking.

At one time during my observation of this patient he got a red erosion of the mucous membrane of the gums below the lower right bicuspids. This lasted only a couple of weeks, but may have been a lupus erythematosus lesion.

The patient suffered from retracted, easily bleeding gums, a heavily coated tongue, a splashing, dilated stomach and an overloaded lower bowel with very offensively smelling evacuations. The colon in the left inguinal region felt like a thick caoutchouc bar.

The whole integument was passively congested, and the patient's hands were markedly tremulous.

CASE 8.—A woman consulted me, March 14, 1908, on account of a red scaly lesion occupying a large part of the left cheek, and other lesions in the left ear shell, on the tip of the nose, on the right cheek, on the right ear, on the forehead and one below the internal canthus of the right eye that involved the mucous membrane of the lower lid. There was also a split-pea-sized lesion on the vermilion of the upper lip. Although none of these lesions were of a classic type, they were characteristic enough both in their appearance and in their course to permit of a diagnosis being made.

The patient's general nutrition was anything but satisfactory. She was large and fat, and the fat was soft and pulpy. She had a bad breath, heavily coated tongue, and suffered from severe headaches attributable to the condition of the stomach. She had had the fallopian tubes removed, April 14, 1906, and up to one year before she had some undetermined trouble in the lungs. Her father, her eldest brother and her cousin had died of pulmonary tuberculosis. Her temperature was generally slightly subnormal, and tuberculin, which was given to her as a treatment, caused no febrile reactions.

The patient's face had always flushed easily from early girlhood, and her present malady had appeared first one year before, as a red lesion on the left cheek. She exhibited still other symptoms of a too mobile vascular system, as whiteness and coldness of the fingers, and coldness of the feet. The eruption improved gradually under a treatment directed to clearing up the gastro-intestinal symptoms. Many of the patches, however, left scars, as is characteristic of lupus erythematosus. New patches of small size and of little induration still appear.

In the spring of 1909 a patch occurred, invading the mucous membrane. This was treated with solid carbon dioxid and disappeared, leaving a slight scar.

CASE 9.—A girl, aged 16, applied for treatment, May 6, 1913. A small red spot had broken out on the external surface of the left lower eyelid one year before, and it began to spread decidedly in October, 1912. When she applied for treatment in May it had invaded the mucous surface of the lid. She also had a patch on the edge of the shell of the left ear. The patches spread as a ring, clearing in the center.

She had a coated tongue with a bright red tip. She had suffered recently from frequent dizzy spells and headache, and occasionally she had wind on the stomach. The stomach was dilated and she had marked splashing. She was constipated. Her feet were always cold.

In the fall of 1913 she had an acute exacerbation in which the eyes were almost closed.

CASE 10.—A woman, aged 30, consulted me, Sept. 13, 1913, for lupus erythematosus which had begun three years previously on the skin at the outer angle of the right eye. The eruption remained confined to this locality for more than one year. Nearly two years after this, a lesion appeared on the right cheek, and a few months afterward another one on the left cheek.

The patient's history previous to the appearance of the eruption was interesting. Just one week before the first occurrence of the lupus erythematosus, she had been operated on for tubal pregnancy. Previous to that she had had an operation for appendicitis; just previous to that for floating kidney, and previous to that she had a curettement. She was subject to migraine that centered particularly in a nerve at the inner canthus of the right eye.

She had a poor appetite. Her tongue was coated, she had a burning pain and much wind in the stomach. She suffered from dizziness and muscae volitantes, and she had a tendency to be constipated. She was a poor sleeper.

When she first consulted me, the lesions were light red, markedly keratotic and circinate, and occupied both cheeks and the right upper eyelid, the edge of this constituting in this case the involvement of the mucous membrane. The mucous membrane of the lower lip was very red and frequently cracked, but the condition was not characteristic enough to say that it was part of the lupus erythematosus process.

The patient's general health was wretched, and she frequently had angioneurotic symptoms of the extremities. One morning during the cool weather in March she came to the office with dead fingers, local syncope. A few minutes later some of the fingers, especially the left annularis, assumed the beautiful transparent pale blue color seen in Raynaud's disease. The hands and forearms were violet blue. On this occasion the lupus erythematosus lesions were light red and desquamating, and one of them, situated outward from the left eye, had an active red border.

CASE 11.—A man, aged 67, and of a particularly robust appearance, called on me on account of lesions in the cheek pouches.

The affection began two and a half years previously as a lesion on the left side of the dorsum of the tongue, where there was still a delicate opalescent shade of color. In the

right cheek pouch there was localized superficial desquamative inflammation with white patches of sodden epithelium scattered over the reddened surface. There was a similar, but much less marked, lesion in the left cheek pouch. The lesions were permanent, but subject to acute exacerbations, during which they became extremely annoying from their painful rawness. During an acute attack there was drooling of a brown fluid.

Besides the foregoing, the patient had vitiligo of the back of the hands, prurigenous eczema of the anus and acne of the buttocks. He also suffered from sharp attacks of pain in the cardiac region, which had been diagnosed as angina pectoris, but which were probably due to an immensely distended colon.

There was no history of syphilis; none of the lesions present resembled syphilis, and the blood gave a negative Wassermann reaction.

Under general treatment and diet directed to correcting the bacterial fermentative processes in the alimentary canal, the lesions in the cheek pouches, the drooling and the eczema ani were reduced to insignificant manifestations. The lesion in the right cheek pouch resulted in a superficial but distinct scarring, and the delicate opalescence on the dorsum of the tongue was also probably due to a fine scarring of the papillary layer. This scarring was of great importance from a diagnostic standpoint.

Syphilis, lichen planus, herpes simplex and lupus erythematosus had to be considered in the diagnosis. Syphilis was excluded because of the appearance of the lesions themselves, the absence of any syphilitic history and the negative Wassermann. Lichen planus of the cheek pouches shows a characteristic fine white lacework and white-topped papules that were never present in this case. Besides the characteristic local appearance of lichen planus, there is usually a lichen planus eruption of the skin. None of these appearances were present in this case. Herpes simplex rarely forms a continuous eruption. It usually appears in outbursts more or less widely separated in time. The individual lesions are usually small and cup shaped with a yellow floor, and if they occur in groups, each group will have a microcyclic polycyclic edge.

The persistency of the lesions, the absence of symptoms pertaining to affections for which they might be mistaken, and the production of superficial scarring lead to the belief that this was a case of lupus erythematosus of the mucous membranes alone.

The eleven cases herein reported show lupus erythematosus in nineteen locations on the mucous membranes. The locations were as follows: cheek pouches, five; gums, three; roof of mouth, one; lips, four; nose, two, and edges of eyelids, four.

Nine of these eleven patients were females, a ratio of more than four to one male. They ranged in age from 16 to 67, two being under 20 and two over 40 years of age, leaving seven, a large majority, between the age limits of 20 and 40. These eleven cases were among thirty-eight instances of the disease seen in private practice since April, 1906. All but one of the eleven had typical lesions on the external surface, while in the one exception, Case 11, the mucous membrane alone was affected, the lesions being in the cheek pouches and on the left side of the dorsum of the tongue. The diagnosis in Case 11 may be questioned, though I believe it to be lupus erythematosus for reasons given in the differential diagnosis in the case report.

Excluding Case 11 for the purpose of determining in how large a percentage of typical cases there was mucous membrane involvement, I found over 27 per cent. It is interesting here to note that Thomas Smith[2] observed sixteen cases with mucous membrane involvement among fifty-six consecutive cases, more than 28 per cent. All were females. This indicates a distinct tendency for the disease to affect the mucous membranes, and this fact may be of the greatest importance from the standpoint of etiology.

One of the characteristics of lupus erythematosus of the mucous membranes is its persistency. As stated before, the hidden lesions, those of the moist surfaces, are usually erosions which, when not acutely inflamed, are covered with sodden epithelium and bordered by an irregular edge that is but slightly raised and without much character. The patch may have a yellow coating or may be leukoplasic. When leukoplasic it has less character than the leukoplasia of lichen planus, syphilis or that resulting from irritants, such as tobacco smoke. It is definitely patchy without papules, and is unlike lichen planus of the mucous membranes, which is papular, the papules being white topped and grouped if multiple, giving a characteristic fine, white, lace-work appearance. Though of long standing, it is less thickened than leukoplasic areas of syphilis or those resulting from irritants, and it has not the corrugated surface often seen in such white areas. The lupus erythematosus erosion is not all leukoplasic nor always leukoplasic in part. It may be opalescent and not eroded, or may have the appearance of a recent erosion produced by cauterization or other traumatism, except that the edge is more distinct in the acute erosion. It may have a most innocent appearance and not cause any disturbance aside from its constant presence.

Mucous patches of syphilis have bases which are covered with more sodden epithelium and have a dirtier appearance. Other signs may or may not be present. As with any of the persistent mucosa lesions, one has to resort to every means to reach a positive conclusion. Some of the late opalescent specific lesions of the tongue may be closely simulated by lupus lesions. The specific lesions here are usually more thickened and are often fissured. They, too, are persistent, remaining for years without treatment, and even in spite of the old methods of medication, though they will yield delightfully to salvarsan. If there is sufficient doubt in favor of a syphilitic nature, even though laboratory findings may be negative, salvarsan should be administered. Mouth lesions may be especially puzzling when the external lesions closely simulate squamous syphilids, as did those in Cases 3 and 7.

While stubbornly resisting treatment, the condition often shows acute exacerbations. These exacerbations are so definitely associated with disturbances in the general health, particularly derangements of the gastro-intestinal system, that one must carefully consider the importance of this in the etiology of the disease. A small area of affected mucous membrane may persist for months without treatment, and even with treatment, both local and internal, may be as unyielding as are some of the external manifestations of the disease. Often when the lesion is nearly healed and all is progressing favorably, some constitutional disturbance will supervene with a coincident sudden reversion. In this respect, these exacerbations bear a close resemblance to herpes simplex with this notable difference, that the individual lesions in herpes quickly and completely disappear, even in those cases in which the attacks are subintrant and therefore continuous.

2. Smith, Thomas: Mucous Membrane Lesions in Lupus Erythematosus, Brit. Jour. Dermat., February, 1906, p. 59.

whereas those of lupus erythematosus improve more slowly, and tend not to disappear, or do so with the utmost deliberation. It is not uncommon to observe the occurrence of herpes simplex affecting the mucous membranes of patients under treatment for lupus erythematosus of the skin or of both the skin and mucous membranes. The lesions of herpes are usually easily distinguishable from the older disease, as the edges show a more acute inflammation, the borders being congested and reddened; and though in acute exacerbations of lupus erythematosus the lesions may have as deeply reddened and prominent borders, there will not be the cup shape, nor will groups have the microcyclic polycyclic edges such as are seen in herpes. In healing, herpes lesions do not leave scars, whereas one of the characteristics of the other disease on the mucous membranes as well as on the skin is its scarring.

When on the vermilion of the lips the lesions are painful, especially during an acute exacerbation, W. K. Sibley[3] mentions this in reporting a case with an active lesion present on the vermilion of the upper lip, which was very painful, whereas the condition inside the mouth had not caused much discomfort. In the four instances mentioned in the case reports of this paper in which the vermilion of the lip was affected, there was an appearance of being coated with collodion, as mentioned in Case 2. This was the best example of this phenomenon in this group of cases, and was accompanied by the greatest discomfort.

Since having attention drawn to the gums of patients with lupus erythematosus, I have observed that only exceptionally are the gums in good condition. A history of easily bleeding gums is common. Gingivitis is almost constantly found. Redundancy or retraction is often marked, and the teeth are usually bad. The conditions are so constant as to point definitely to long-continued antecedent gastro-intestinal derangements which have reacted on the gums and teeth. This would seem to be a point of some importance, which, associated with the not infrequent presence of more characteristic affections of the mucous membranes, should direct the attention of the observer to digestive and assimilative faults of long standing as most probable causative factors. The fact that acute exacerbations frequently occur associated with acute or subacute digestive disturbances would also point to an intimate dependence of the disease on toxemias of gastro-intestinal origin.

One of the most interesting conclusions reached by a careful observation of all the phases of lupus erythematosus of the mucous membranes is that the lesions are the result of a general disease. The manifestations on the mucous membranes and on the skin as well are only symptoms of a deeper pathologic condition. The foundational disturbances undoubtedly vary in different individuals, but, with the cases considered in this article, the evidence pointing to digestive and assimilative faults is weightiest of all. These faults are such long-standing ones, having become so thoroughly habitual, that their eradication is accomplished only after long and persistent efforts. The difficulties encountered in correcting the faulty conditions would partly explain the stubbornness which is characteristic of the disease in yielding to treatment. Not only the resistance to local treatment, but also the recurrences and the appearance of new lesions for a long time while treatment is in progress, can be more easily understood with this point in view. Furthermore, as important as any conclusion is the one that internal treatment and a proper regimen are as necessary as is local treatment for the cure of the patient.

323 Geary Street.

3. Sibley, W. Knowsley: Brit. Jour. Dermat., March, 1914, p. 101. In connection with this case report a complete bibliography is given.

ABSTRACT OF DISCUSSION

DR. JOSEPH ZEISLER, Chicago: For many years I have been not only embarrassed but severely mortified by the rebelliousness of cases of lupus erythematosus against all of our therapeutic efforts. I say "all" because if we are enthusiastic about one or the other of modern treatments, sooner or later we will find it will fail. We must still admire the wisdom of Kaposi, who said that cases of lupus erythematosus will get well in spite of the worst treatment, and again they will resist our best treatment. Freezing, which we thought for a time was not only the newest but the best method, will sometimes fail us. The beneficial effect is sometimes temporary.

Radium, in favor of which much is said, may cause violent reactions. It is in this sense that I look on Dr. Culver's treatment as an important contribution, in bringing out the internal aspects and treatment of these cases. I believe we must make as careful a study of each case as we can from a symptomatic point of view, and try to find a course of treatment congenial to that. It will not, therefore, always be the same treatment which we should use.

I believe we shall have to include lupus erythematosus with those diseases which perhaps are produced by a disturbance of the internal secretions. That does not militate against the view just expressed by Dr. Culver, as we know there are some secretions eliminated from the intestinal wall which have a bearing. I will try in future to treat my cases on the idea that there is some disturbance of the internal secretions which we must try to overcome by employing various organotherapeutic methods.

DR. EVERETT S. LAIN, Oklahoma City: My experience in roentgenology has been a valuable aid in the diagnosis of many skin eruptions. My curiosity or interest was excited in this subject, first, by empirically treating urticaria with the vaccine of the *Bacillus coli communis* and noting the prompt response, sometimes in one or two hours, in cases which had been resisting all treatment for a week or several days previously. Next, when I heard a most interesting discussion by Dr. Rosenow last May in Chicago, I came home and began treating by Roentgen ray the teeth in cases of erythema multiforme and other diseases which have been classified as having an idiopathic etiology. I have now, to my mind, some very interesting observations, which, if borne out in a sufficient number of cases, I believe will throw further light on this subject. I believe when we begin to study more closely the focal or internal infections, the same as is being done by the internists with rheumatism, we, too, shall be wiser. The dentists are curing many things by treating the teeth. They are really curing some cases of so-called rheumatism.

DR. J. B. KESSLER, Iowa City, Iowa: Some of the cases of mucous membrane eruptions are difficult to diagnose. A recent case was that of a woman, probably 21 or 22 years of age, who had a pustule on the under lip, extending over on to the vermilion border of the mucous membrane. I examined my patient and did not find any enlarged glands, although this was important. A histologic biopsy was made, and our microscopist thought it was more like tuberculosis. The first Wassermann test was one plus, and the second was two plus. That did not help me. I could not make up my mind that it was syphilitic. In the past we worked without Wassermann examinations to help us out, and so we treated our patients on the line of the textbook teaching of the past, namely, to give a trial of mercury when you do not know what else to do. We started first with hypodermic injections of mercuric chlorid. Giving her a rest

from those injections, I employed increasing doses of mercury protiodid. I thought I would return then to the other and the local applications of mercury ointment. To my surprise, before I could get back to the hypodermic injections my patient's lip had improved, and in a couple of weeks it had recovered. I am still at a loss to know whether I had a syphilitic case or not. This was a married woman, with no history of syphilis on either side, but she had worked in a button factory, and there many of the people had sores on their mouths and on their fingers. Now, the point is, could there be syphilitic eruptions without enlarged glands?

Dr. W. A. Pusey, Chicago: If I followed Dr. Culver correctly, he said only one of his cases was practically confined to the mucous membrane of the mouth and lips, and in that case he modestly left the diagnosis open. I have seen several cases of erythematous lupus in which I had no doubt of the diagnosis and which did not spread outwardly to any considerable degree beyond the vermilion surface of the lips. I believe Dr. Culver has done well to call attention to the occurrence of these cases of erythematous lupus on mucous surfaces, and to the possibility of the disease being confined entirely to the buccal mucous membrane. I value highly his comments on the internal factors on the causation of erythematous lupus. To my mind erythematous lupus belongs in the group of toxic dermatoses—in the erythema multiforme group. I have seen erythematous lupus lesions on the face in association with erythema multiforme on other parts of the body, particularly on the hands and forearms. I recall one case of a tuberculous woman with typical erythematous lupus on the face who had lesions on the hands strikingly suggestive of Raynaud's disease. To my mind erythematous lupus is not the expression of a specific intoxication, but runs the whole gamut of intoxications from chronic infections like tuberculosis to such intoxications as come from intestinal absorption. And in searching for the cause of the cases we have to take into consideration all the possibilities of internal intoxication. I would like to emphasize what Dr. Zeisler said about the futility of any single local application in erythematous lupus. We can get benefit from many of them, but we cannot be sure in a given case of benefit from any of them. I do not use radium in erythematous lupus, and very rarely now do I use the Roentgen ray. I have been disappointed, like Dr. Culver, in carbon dioxid snow in erythematous lupus, and I have in a few cases seen it much abused by overfreezing with it. At the present moment I am inclined to believe that vigorous treatment with ultraviolet light is giving me better results in erythematous lupus than anything else I have used. It is a method causing some temporary discomfort, but free from danger.

Dr. Douglass W. Montgomery, San Francisco: It is of course admitted that the etiology of these cases is obscure; although we think we have a right to assume that the disease is due to a toxin located in the gastro-intestinal canal, we know neither the toxin nor the exact place of its origin. The improvement in almost any case is slow. There are two situations in the alimentary canal particularly liable to infection: one the stomach, which is a sac; and the other the second stomach, the cecum, which is also a sac. When the eruption slows down to the very chronic state, then we do get good results from the use of carbon dioxid snow. it acts as a strong revulsive, and gives the eruption the last kick to kick it out. We have, however, given up the use of the carbon dioxid snow during the acute stage.

Dr. A. Ravogli, Cincinnati: I have spoken already in other meetings on the etiology of lupus erythematosus. For me, from the clinical observation and the reaction to the tuberculin, there is no doubt whatever of its tubercular origin. I have seen lupus erythematosus limited to the mucous membranes, and I have seen lupus erythematosus of the mucous membrane associated with lupus erythematosus of the skin, and some of the cases ended with general tuberculosis. I am now using as treatment—and with very satisfactory results—the cataphoresis method. Take the negative pole of a galvanic current and attach it to a little tampon saturated in 10 per cent. solution of zinc chlorid and apply this on the patch of lupus erythematosus, placing the other pole in the hand of the patient, for ten or fifteen minutes of current. The zinc chlorid, together with the action of the cataphoresis of the electrical current, produces an induration of the patch which lasts for something like twenty-four hours, and then gradually disappears. From that method I have seen very beautiful results. Together with this application, sometimes, when the little nodules begin to break down, I touch them with compound solution of cresol; and in four or five weeks I have seen satisfactory results. A case of lupus erythematosus of the tongue in the form of rings, without a manifestation of the lupus erythematosus of the skin, associated with hypertrophy of the submaxillary glands, healed up by touching it twice a week with compound solution of cresol. This application produces some temporary pain, but this is relieved immediately by touching with alcohol; touch it with compound solution of cresol, keeping it there as long as the patient can stand it, and then wash it with alcohol.

Dr. A. J. Markley, Denver: I have had the opportunity of observing a large number of patients in the sanatoriums about Denver and Colorado Springs during the past six years and I can say that in these institutions lupus erythematosus is a rare disease. These cases represent all types of tuberculosis in not only the incipient but the most advanced stages, yet lupus erythematosus occurs most infrequently in Colorado and such an experience, if it means anything, points against any direct connection between the two diseases. I have, however, seen one brilliant result from tuberculin in a case of rapidly developing lupus erythematosus in a woman with no physical manifestations of tuberculosis; the condition cleared up rapidly under injections of tuberculin.

Dr. H. H. Hazen, Washington, D. C.: I think we must be careful in our cases, for with a very large percentage of all adults we find there a strong positive reaction to the tuberculin. I think the Austrian army people found that 60 or 70 per cent. of all the men who came up for examination gave a positive reaction. A number of years ago at the Phipps Clinic at Johns Hopkins we found that all the adults connected gave a very strong positive von Pirquet reaction. I do not think we can say that the cutaneous test means anything in adults. Even von Pirquet himself admits that it is too delicate.

Dr. Ernest Dwight Chipman, San Francisco: The point emphasized in the discussion, that in lupus erythematosus the infection is not necessarily constant and specific, appeals to me strongly. It seems probable that we shall trace the origin of obscure dermatoses more and more to various infections. I recall a case of lupus vulgaris in which I was persuaded to inject a substance of rather uncertain composition, now called a phylacogen. Within forty-eight hours there appeared a typical zoster reaction along the course of the neighboring nerve. Some time ago, in dealing with an herpes progenitalis, I sought in vain a focal infection along the urethra. Later the same individual was found to be suffering with chronic appendicitis, a source which I had neglected to explore. This man has had no recurrence of his herpes since the removal of the appendix.

The Child and the Community.—It is the duty of the community to protect its children from prolonged labor in mill or factory. That the growing child should be subjected to the strain of long hours of the grinding monotony of factory work is a short-sighted policy for the community, as well from an economic point of view as from a humanitarian one. The child of today makes the community of tomorrow, and whatever the physical, mental and moral education of the child is now will be reflected in the character and standards of his day when he transmutes his present training into action. —E. O. Otis, M.D., paper read at Seattle meeting of the National Association for the Study and Prevention of Tuberculosis.

PLASMA AND BLOOD VOLUME IN PREGNANCY*

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From the beginning to the middle of the nineteenth century, it was believed that the total volume of circulating blood underwent an increase in pregnancy, with a relative increase in the fixed elements. This condition was called "plethora of pregnancy" and all untoward symptoms were treated by bleeding and cupping.

It was later shown by Andral and Gavarret, Becquerel and Rodier, and Reignauld[1] that in the last months of pregnancy the red cells and albuminous content decreased, whereas the white cells and water content of the blood increased. The theory of chlorosis or chloro-anemia of pregnancy was thereupon developed by Reignauld, Cazeaux, Kiwisch and Scanzoni,[1] and an increase of diet replaced bleeding as a therapeutic measure.

French obstetricians, and particularly Kiwisch, later modified this view and postulated an increase in the total blood volume with a relative increase in the water content, and termed this condition "serous plethora." This conception has been more or less universally accepted and it probably represents the true condition.

Welcker[2] was the first to report experiments on blood volume in pregnant animals, though his results were more or less conflicting. He reported finding 7.6 gm. of blood per hundred gm. of body weight in a pregnant mouse as contrasted with a normal of 8 gm. He also concluded that the blood volume was greater in males. In amphibia the relative blood volume of the pregnant female, reckoned free from her eggs, was rarely as great as that of the male. In a suckling cat the value was less than in the male.

Heidenhain[3] found that a pregnant rabbit contained 1/14.9 of its body weight in blood, while the normal figure was 1/18. In 1872 Spiegelberg and Gscheidlen[4] made a study of this problem on pregnant dogs. Their paper is very convincing and is therefore abstracted somewhat in detail. They used a modification of the Welcker method.

In six nonpregnant dogs they found 7.12 to 8.92 per cent. of blood, an average of 7.87 per cent., whereas in ten pregnant dogs they found 7.29 to 12.41 per cent., an average of 9 per cent. Attention was called to the values in relation to the duration of pregnancy, showing that in five early cases, in which the uterine contents averaged 657 gm., the blood volume was normal, or 7.8 per cent., while in five late cases, in which the uterine contents averaged 1,193 gm., the average blood volume was 10.5 per cent.

In these dogs it was found that a very slight increase of hemoglobin took place, and the water content of the blood increased about 8 parts per 1,000. Spiegelberg and Gscheidlen concluded that a slight increase in the hemoglobin and water fractions would not explain their results and therefore it must be assumed that a real increase in the blood volume, both relative and absolute, occurs in pregnancy.

Baudelocque was the first to call attention to a low specific gravity in pregnancy. Andral and Gavarret[5] found an increase in the water content of from 7 to 10 parts per 1,000. Nasse[6] gave figures for the specific gravity of plasma and blood in pregnancy; the former he found to be 1.0255, the latter 1.045, as contrasted to normals, 1.0265 and 1.050 respectively. He quotes Andral and Gavarret and Becquerel and Rodier, who found respectively 127 and 125 gm. of red blood corpuscles per liter. His own figures varied from 95 to 125 gm. per liter.

Zangemeister[7] found in pregnancy a lowering of the specific gravity and of the molecular concentration of the plasma, freezing point, $\Delta = 0.52$. The chlorids were, however, increased above values found in normal controls. He reported that the normal figures were usually obtained on the ninth to twelfth day after labor.

In 1911 Zuntz[8] made use of the carbon monoxid method of Haldane and Smith as modified by Zuntz and Plesch, to study the blood volume in pregnant women. Haldane and Smith, and Plesch gave as normal blood values 4.69 to 6.05 per cent. of the body weight. In five cases before labor, Zuntz found large blood volumes of 4,077 to 6,756 c.c., representing 6.03 to 11.26 per cent., averaging 8.39 per cent. of the body weight. Three out of the four cases showed a decrease in both absolute and relative blood volume following labor. One case did not present these findings, though Zuntz thought this to be due to an experimental error. Even after labor the three cases showed values slightly above normal. Zuntz admitted that some carbon monoxid was undoubtedly lost through the placenta, but considered his conclusions justified since he made no allowance for the uterine contents in calculating the percentages. He stated that the chief drawback of this method, aside from its complexity, is that in the calculations small errors in the experimental work are magnified greatly in the final results.

About the same time, 1911, H. Fries[9] published a few results obtained by means of the von Behring tetanus antitoxin method on pregnant and puerperal women. He recognized the great drawback of this method, for though it gives fairly consistent results, its nature does not permit of repetition on the same patient. He also reported a personal communication with von Behring to the effect that the latter found by the use of his method a relatively and absolutely small blood volume in pregnant animals. Fries tried the method on women with the following results:

1. Ten nonpregnant women, averaging 63.5 kg. in weight, had a blood volume of 7.9 per cent. of the body weight, or 1/12.6.

2. Six invalid patients in the gynecologic wards, averaging 54.2 kg. in weight, had the same average value.

* From the Obstetrical, James Buchanan Brady Urological, and Medical Clinics of the Johns Hopkins Hospital.

1. Cited by Spiegelberg and Gscheidlen, Footnote 4.
2. Welcker: Prag. Vierteljahrschr. f. prakt. Heilk., 1854, iv, 11; Ztschr. f. rat. Med., 1858, iv, 145.
3. Heidenhain, R.: Arch. f. physiol. Heilk., 1857, i, 507.
4. Spiegelberg and Gscheidlen: Untersuchungen über die Blutmenge trächtiger Hunde, Arch. f. Gynäk., 1872, iv, 112.
5. Andral and Gavarret: Cited in Winckel's Handbuch der Geburtshülfe, 1903, i, Part 1, p. 332.
6. Nasse: Das Blut der Schwangeren, Arch. f. Gynäk., 1876, Part 2, p. 315.
7. Zangemeister: Die Beschaffenheit des Blutes in der Schwangerschaft und der Geburt, Ztschr. f. Geburtsh. u. Gynäk., 1903, xlix, 92.
8. Zuntz: Gesammtblutmenge in der Gravidität, Zentralbl. f. Gynäk., 1911, p. 1365.
9. Fries, H.: Ueber Veränderungen der Blutmenge in der Schwangerschaft, Ztschr. f. Geburtsh. u. Gynäk., 1911, lxix, 340.

3. Ten pregnant women in the eighth to the tenth month, averaging 62 kg. in weight, had 7.4 per cent., or 1/13.5.

4. Four women during labor showed 8.7 per cent., or 1/11.5.

5. Nine puerperal women showed 8.7 per cent., or 1/11.5.

It was found by testing the blood from the umbilical vessels that no antitoxin passed to the child. Römer had shown that this occurs some time after the injection, probably several weeks.

On the basis of these observations Fries concluded (1) that his results on normals compared well with the accepted figures in the literature; (2) that a decrease in volume rather than an increase occurs in pregnancy, and (3) that during labor and during the puerperium there is a gradual rise to normal.

We would call attention to a mistake which he made in calculating the percentage of body weight in the first four cases given in the accompanying table. It is also seen that four out of the ten cases in his Table 3 have relatively high blood volumes, and it is only by including such values as were noted in his 81 kg. patient, that the average percentage of body weight is made to fall below the normal of 7.9 per cent.[10] Three of the four cases in labor showed a very high blood volume. His figures for puerperal cases varied from 6.4 to 13.8 per cent. and can by no means serve as the basis for any sound theorizing. Six of these nine cases had low values, and three had very high values totally out of keeping with the others.

Whether or not the von Behring method will give accurate results in pregnant women we are not prepared to say, but it seems very unlikely that valuable data can be obtained by means of any method which does not allow repeated observations on the same patient. This is particularly true in relation to obstetric patients in whom many variable factors have to be taken into account, such as the weight of the child, loss of blood at labor, edema, obesity, nutritional conditions and variations in the blood volume itself. Furthermore, it would seem impossible to get reliable results by using the von Behring method on a patient who had previously received antitoxin of any kind. This new method permits repetition of the test at will.

The present paper is a preliminary communication based on results obtained in a small series of pregnant women, by means of a new method for the determination of total plasma and blood volume devised by Rowntree, Keith and Geraghty.[11] This method consists in the introduction directly into the circulation of a nontoxic, slowly absorbable dye, vital red, which remains in the plasma long enough for thorough mixing, and the colorimetric determination of its concentration in the plasma by comparison with a suitable standard mixture of dye and plasma. It gives the total plasma volume, and by the use of the hematocrit, the total blood volume can be obtained. The reader is referred to the paper of these authors[10] for fuller details of the method, and for results obtained in other conditions. It is to be regretted that, owing to the war, a supply of the dye sufficient to enable us to study a large number of patients was not available.

10. Haldane and Smith (The Mass and Oxygen Capacity of the Blood in Man, Jour. Physiol., 1900, xxv, 331), and Keith, Rowntree and Geraghty (Arch. Int. Med., to be published), showed that obese patients had a relatively small blood volume.

11. Rowntree, Keith and Geraghty: Tr. Assn. Am. Phys., 1915.

TECHNIC

A 1.5 per cent. solution of the dye in freshly distilled water is sterilized by boiling for from five to ten minutes, and aseptically stoppered in a sterile Erlenmayer flask. This solution is made up as required.

The patient is weighed stripped, and the dose is determined on the basis of 3 mg. of the dye per kilogram of body weight. The skin over the anterior surface of both elbows is prepared in the usual manner for venipuncture. Under aseptic technic a small (20 gage) platinum-iridium needle, to which is attached a piece of rubber tubing 2 or 3 cm. long, is inserted into the vein. Ten c.c. of blood are withdrawn into a pipet and emptied into a 50 c.c. centrifuge tube containing just sufficient powdered sodium oxalate to prevent coagulation. The plasma so obtained is used in the preparation of the standard which is described below.[12] The rubber tubing is removed from the needle, the latter being left in the vein and a 20 c.c. record syringe containing the exact dose[13] of the dye is attached and its contents injected, after which the needle is withdrawn. Three minutes later, a needle is inserted into a vein of the opposite arm. Without impeding the venous return, 10 c.c. of blood are withdrawn immediately by means of a pipet; two or three minutes later another 10 c.c. are withdrawn. The first is placed in a 50 c.c. centrifuge tube and the second in a 15 c.c. graduated centrifuge tube. To each, sufficient dry sodium oxalate is added to prevent clotting, and the tubes are capped with rubber to prevent evaporation during centrifugalization. The three tubes are placed in a high power centrifuge and subjected to 3,000 revolutions per minute for twenty minutes.[14] After removal from the centrifuge, the relative proportion of erythrocytes and plasma in the graduated tube is noted. Without disturbing the red cells, the plasma is carefully pipetted off from each tube and placed in a clean test tube. We now have three test tubes, (1) containing plasma without dye, and (2 and 3) containing plasma and dye in an unknown concentration. A suitable dye standard mixture of known dye content is made, and with it 2 and 3 are compared.

This standard solution,[15] which has been found to be well adapted to colorimetric determinations and applicable in all cases, is made as follows: 0.5 c.c. (7.5 mg. of dye) of the dye solution used for the injection is diluted accurately to 100 c.c. with 0.8 per cent. sodium chlorid solution. A convenient amount of this is mixed with an equal volume of the patient's plasma, and twice that amount of saline, yielding a dilution of 1/4. The prism of Rowntree and Geraghty's modification of the Authenrieth-Königsberger apparatus is filled with this solution.

12. This procedure of taking plasma for making the standard in each case was found necessary on account of the great variation of the color of the plasma in different individuals.

13. The amount injected is 3 mg. per kilogram. The weight in pounds divided by 11 gives the number of c.c. of a 1.5 per cent. solution to be injected.

14. To prevent hemolysis all pipets and centrifuge tubes must be thoroughly washed with normal saline and dried before use. It is obvious that the slightest hemolysis will alter the color of the plasma and make accurate colorimeter readings impossible.

15. The standard selected has been prepared on the following basis: The amount of dye injected into the patient is diluted in the number of cubic centimeters of salt solution equal to 4 per cent. of the body weight expressed in grams, for example, a man weighing 70 kg. would be given 210 mg. of vital red (14 c.c. of a 1.5 per cent. solution). Four per cent. of 70 kg. equals 2,800 gm. or 2,800 c.c. without making any correction for the differing specific gravities of plasma and water. Accordingly, if 210 mg. be dissolved in 2,800 c.c. of salt solution, 7.5 mg. of the dye dissolved in 100 c.c. would give a standard solution of the desired concentration.

Then Specimens 2 and 3 of the patient's plasma are diluted with three parts of saline, placed in the cup of the colorimeter and read against the above standard.

CALCULATION OF RESULTS

In determining the plasma volume, the weight of the patient is designated as W, the colorimetric reading of the standard solution equals 100, while the reading of the patient's plasma against this standard is designated as R. The standard is prepared so that the amount of dye injected is diluted to 40 c.c. for every kilogram of body weight. Accordingly the number of cubic centimeters of plasma in the patient's body is represented by the equation $\frac{100}{R} \times 40\ W$ or $\frac{4{,}000\ W}{R}$

The total blood volume is calculated from the plasma volume on the basis of the hematocrit reading.

1. Whereas the normal amount of plasma is 50 c.c. per kilogram of body weight,[10] an average of 58.4 c.c. per kilogram was found in twelve women before labor, and of 49.3 c.c. per kilogram in ten women after labor. It therefore seems justifiable to conclude that there is an absolute as well as a relative increase in the plasma volume late in pregnancy, with a decrease in the puerperium.

2. The hematocrit readings vary considerably in different cases. All but one were below the normal of 43 per cent.,[10] the average being 35.8 per cent. in twelve cases before labor. There appears to be a general tendency to return to normal after labor. It may be more than a coincidence that in Case 6, in which the patient lost considerable blood, the hematocrit red blood cell value fell. These findings are in harmony with the idea of "serous plethora."

RESULTS OF OBSERVATIONS ON THE BLOOD IN THIRTEEN CASES OF PREGNANCY

No.	Age	Para	Time Relation to Labor in Days		Blood Lost, c.c.	Weight of Child, gm.	Body Weight, kg.	Plasma Volume, c.c.	Plasma, c.c. per kg.	Blood Volume, c.c.	Per Cent. of Body Weight	Per Cent. of Body Weight*	Estimated Decrease in Blood Vol., c.c.	Hematocrit per cent. of R. B. C.
			Before	After										
1 7133	21 ..	0 ..	2 ..	.. 5	210 ...	4,165	55.5 48.2	3,213 2,487	57.9 51.6	5,627 4,363	10.66 9.5	11.6	 1,274	43 43
2 7151	20 ..	1 ..	19 ..	.. 4 11	160	4,150	61 52.7 53.9	3,243 3,057 2,641	54.8 58 49	5,306 4,709 4,192	9.13 9.36 8.1	10	..... 506 1,286	37 35 37
3 6903	16 ..	0 ..	13 ..	.. 4	150 ...	3,315	51.8 45.4	2,921 2,243	56.6 49.4	3,971 3,299	8.05 7.61	8.5	 672	34 32
4 7103	20 ..	0 ..	9 ..	.. 1½ 9	325	3,100	57 50 50.5	3,329 3,030 2,525	58.4 60.6 50	5,044 4,734 3,945	9.03 9.94 8.2	9.6	..... 310 1,099	34 36 36
5 7040	23 ..	3 ..	6 ..	.. 4	250 ...	3,970	65.6 55	3,870 2,695	59 49	5,691 4,022	9.11 7.68	9.7	 1,569	32 33
6 7112	25 ..	2 ..	4 ..	.. 3	800 ...	3,685	63.9 57.3	3,623 2,974	56.7 51.9	6,029 4,724	9.92 8.65	9.5	 1,218	40 37
7 6954	22 ..	1 ..	20 ..	.. 9	200 ...	4,075	64.5 60	4,689 3,078	72.7 51.3	7,105 4,809	11.35 8.41	12.5	 2,296	34? 36
8 7048	22 ..	2 ..	4 ..	.. 7	100 ...	3,640	61.4 59.3	3,869 2,894	63.5 48.8	5,262 4,904	8.98 8.68	10.2	 358	28 41
9 7092	18 ..	0 ..	11 ..	.. 5	225 ...	3,420	61.7 50.1	2,974 2,216	48.2 37.5	4,647 3,821	7.89 6.79	9.4	 826	36 42
10 7096	20 ..	0 ..	1 ..	.. 8	675 ...	3,420	63 57	3,717 2,519	59 44.2	6,300 3,760	10.5 6.9	11.4	 2,640	41 43
11 7084	16 ..	0 ..	6 ..	.. 10	200 ...	1,040	47 43.6	1,795 1,548	38.1 35.5	3,042 2,660	6.78 6.43	....	 373	41 42
12 7068	17	0	61	..	...	.....	54.5	3,461	63.5	5,408	10.42	....	.....	36
13 7105	19	0	14?	..	...	.....	57.3	3,266	57	5,184	9.51	....	.....	37

* Estimated free from uterine contents.

For these readings the volume of red blood corpuscles is designated as P and the plasma volume as 100 — P. The total blood volume is estimated from the following equations:

$$\frac{\text{Total plasma volume} \times 100}{100 - P}$$

In estimating the percentage of body weight, it has been assumed that the specific gravity of blood is 1.050.

RESULTS

The determinations of plasma and blood volumes were made before or after labor, or both, in a series of thirteen women. The values obtained as well as other data bearing on the results appear in the accompanying table.

Too few patients have been studied to permit of far-reaching conclusions, but a few interesting features are worthy of comment.

3. The normal blood volume has been found to be 8.8 per cent. of the body weight,[10] but our twelve cases showed an average of 9.56 per cent. before labor, and ten of them showed an average of 9.05 per cent. after labor. The normal percentage of body weight was based on figures obtained from males averaging about 140 pounds. In the twelve cases here included the patients averaged 133.5 pounds before labor and the ten cases after labor averaged 121 pounds. With the exception of No. 11, all the patients showed large total blood volumes of 4, 5, and even 6 liters, though no patient weighed over 143 pounds. In Case 7 the hematocrit value was not taken before labor, but if a hematocrit finding of red cells 2 per cent. lower than that obtained after labor is used, a blood volume of over 7 liters is obtained. Such findings easily explain the clinical observation that a considerable loss of blood is less dangerous to a woman in labor

than at any other time. Indeed, Gjestland[16] reported two cases in which the patient survived the loss of 3,000 and 3,400 c.c. of blood respectively. The latter patient, he stated, had practically a normal blood picture twenty-seven days after labor. Among 20,628 cases he found eighty-one patients who survived a loss of over 2,000 c.c. He concluded that in pregnancy the blood volume must be at least 1/13 of the body weight.

4. In Cases 2, 3, 4 and 8 there was relatively little decrease or even a relative increase in blood volume after labor. Inasmuch as these cases were all studied within the first four days we were led to repeat the determinations in Cases 2 and 4 with the results noted in the table. Such findings make it highly probable that, when there is no excessive hemorrhage, the physiologic return of the blood volume to normal occurs slowly during the puerperium.

5. In using the Welcker method, Spiegelberg and Gscheidlen were careful to use the "Reingewicht" for calculations, that is, the body weight of the animal minus intestinal and uterine contents. This is obviously impossible in human beings, but approximate values may be obtained by allowing for a little more than the weight of the child. It was found that the figures for total blood volume were very little if at all changed by this calculation, for if the body weight is reduced the amount of dye injected would be correspondingly smaller. The relative blood volume, however, is perceptibly increased as follows:

	Per Cent.
Average of 10 cases before labor	9.48
Calculated average of same cases, "Reingewicht"	10.24

This would tend to show that the increase in the maternal circulation is even greater than that shown by this method.

6. Inasmuch as the dye used is practically nondialyzable, it is not to be expected that it passes rapidly through the placenta and so disappears from the maternal circulation. In Case 10 the opportunity was taken to examine the fetal blood and urine from the child born five hours after the test was made. The dye could not be detected in either, nor could it be found in the placenta on microscopic examination, though its presence in dilute form in the syncytium is not to be excluded by such means. It is very unlikely, however, that the syncytium takes up any appreciable amount of the dye, for the samples of blood taken three and six minutes after injection showed no marked variation in dye content. Constant results were also obtained in one case in which the samples were taken at intervals of three, ten and eleven minutes. Furthermore, the fact that a decrease in blood mass is not found immediately after labor (Cases 2 and 4) renders such an occurrence very improbable.

7. The only patient not showing an increased blood volume was the one in Case 11, who had a premature labor at seven and a half months which was complicated by syphilis and nephritis. This case has not been included in calculating the average figures for normal pregnancy.

CONCLUSIONS

These studies indicate that there is an increase in the absolute and relative volumes of both plasma and blood late in pregnancy with a slow return to normal during the puerperium.

These findings confirm the work of Zuntz on humans, and of Heidenhain and Spiegelberg and Gscheidlen on animals.

16. Gjestland: Starke Blutung bei der Geburt. Einen wie starken Blutverlust verträgt der Mensch? Cited in Zentralbl. f. Gynäk., 1914, i, 616.

TUBERCULIN TESTS IN CHILDREN OF COLORADO *

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It is customary for us to quote statistics relative to the prevalence of tuberculous infection among children, but we seldom question the source of this information. Until quite recently the chief statistics were those of von Pirquet and Hamburger of Vienna, Calmette of Lille, and others who have obtained their data from a class of patients and under conditions very different from our own. It seems to be taken for granted that tuberculous infection is common among children under all social conditions.

I attempted to get information from my colleagues as to the results of their tuberculin tests, but found that no systematic records were being kept in Colorado, except possibly by a very few men. Even at the university clinic, in Denver, no records of such tests have been kept.

There seems to be very scant information in this country regarding the prevalence of tuberculous infection among children. Such studies as have been published are largely from charity hospitals and dispensary patients. Such reports indicate about the same percentage of "reactors" among children in this country as is found under similar conditions in Europe.

We must assume that practically all children have been exposed to infection by tubercle bacilli before they reach the age of 14 years. Those living in the tenement districts of large cities are exposed to the most intense infection, under such conditions as bad air, lack of sunshine and poor food, which would render them most susceptible.

Under similar conditions in Colorado the percentage of "reactors" might be the same as is found in New York, but this is not likely, and it is evident that in the small cities and country districts of the Rocky Mountain region where there is no overcrowding, plenty of food and sunshine, the percentage of reactors is less than in the eastern cities. There seems to be little doubt that this also applies to other parts of the country.

Dr. J. B. Manning of Seattle wrote as follows:

> I made a careful clinical study of 228 children coming to the Children's Clinic of the Tuberculosis Division of the Seattle Health Department, in relation to tuberculous surroundings, controlled by von Pirquet tests. Of 166 children with definitely known exposure to tuberculosis, 50.60 per cent. reacted positively to the von Pirquet test, 49.3 per cent. reacted negatively to the same test. Of the 62 children examined with a history of no known exposure, 14 reacted positively, 22.8 per cent., and 48, or 77.4 per cent., reacted negatively. Between 10 and 15 years there were the largest number of reactors, 58.1 per cent. This is far below Hamburger's or von Pirquet's figures for the frequency of tuberculosis among children of this age. These differences, I believe, are readily explained on the basis of different community, characteristics of climate, housing and sanitation.

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Manning's results are very different from those of Fishberg, who found that among 692 children living with tuberculous parents, in the tenements of New York, 67.25 per cent. reacted, while among 588 children of the same social class, but not living with tuberculous parents, 52.72 per cent. reacted. The reason for this large percentage of reactors seems to be the general and widespread presence of the infection. City children show from 50 to 100 per cent. of reactors, while tests made in the country districts of the same region show only 25 per cent.

The tuberculin reaction is evidence of hypersensitiveness brought about by the presence of tubercle bacilli in the body tissues. The phenomenon resembles anaphylaxis. The secretions of the tubercle bacillus sensitizes the animal to subsequent inoculation of its own proteins. This reaction does not indicate clinical tuberculosis, but it does indicate the presence in the body, at some time, of living active tubercle bacilli.

In using old tuberculin for the cutaneous tests we are employing a crude material, composed of fats and proteins. Old tuberculin may also lack substances contained in the living bacillus, but which are destroyed in its preparation.

TABLE 1.—RESULTS OF CUTANEOUS TUBERCULIN TESTS BY AGES

Age, yrs.	Positive	Negative	Total
1	2	3	5
2	1	2	3
3	0	2	2
4	1	4	5
5	2	3	5
6	2	8	10
7	2	4	6
8	2	2	4
9	1	6	7
10	3	1	4
11	2	4	6
12	2	2	4
13	3	0	3
14	2	0	2
	25	41	66

I realize that my series of cases is small, but they were private patients and from families known to me personally. The tests were made because the children were showing symptoms which might be due to tuberculosis. These cutaneous tests have diagnostic value in both a positive and negative way.

TABLE 2.—COMPARISON OF REACTIONS IN CHILDREN FROM TUBERCULOUS AND NONTUBERCULOUS PARENTS

Age of child, years	Tuberculous children	Non-tuberculous children	Tuberculous parents	Non-tuberculous parents
1	2	3	5	0
2	1	2	2	1
3	0	2	0	2
4	1	4	2	3
5	2	3	3	2
6	2	8	5	4*
7	2	4	3	3
8	2	2	1	2*
9	1	6	3	4
10	3	1	3	1
11	2	4	2	4
12	2	2	1	3
13	3	0	2	*
14	2	0	2	0
	25	41	34	29

* Uncertain.

From Table 2 it will be seen that 25 (38 per cent.) of the children in my series gave a positive reaction; 41 (62 per cent.) were negative; 34 of these children had tuberculous parents, while 29 had parents free from tuberculosis. In spite of the fact that 50 per cent. of these children had parents who had suffered from active tuberculosis, only 38 per cent. of the children showed a positive reaction at the time of examination. Probably half of the families living in Colorado contains one or more adult consumptives. This indicates the opportunity for infecting the children.

In 22 instances tuberculous children had tuberculous parents. In 27 instances, nontuberculous children had nontuberculous parents. In 12 instances nontuberculous children had tuberculous parents. In 1 instance a tuberculous child had nontuberculous parents.

Of the 12 children who did not react, but who had tuberculous parents, three were less than 2 years old; one 2 years old; one 4; one 5; three 6; one 7 and two 9. This is interesting as showing how children may associate with infected persons without themselves becoming infected. It is also remarkable how seldom children reacted in instances in which their parents were free from tuberculosis and how frequently they did react when the parents had tuberculosis. In some families all the children reacted. This occurred usually when a parent had active tuberculosis and lived in the house with young children. In other families all the children gave negative reactions. This usually occurred when the consumptive parent was isolated from the children or great care was taken with the sputum. Probably it will be the rule that when there is massive infection all the children will show reaction.

My series include 132 tests made on 110 persons. Of these individuals, 69 were under 14 years of age; 18 were between the ages of 14 and 25 years, and 23 were over 25. In 20 instances when I have made more than one test on the same person, the two or three tests have given the same results except in two instances.

In sixteen instances the von Pirquet and Moro tests were used and were both negative or both positive except in two instances. In one of these the Moro was used in a girl of 11 years while she had pneumonia, and was negative. Two weeks later she showed a delayed reaction to the von Pirquet. In the other the Moro was negative and the von Pirquet slightly positive after forty-eight hours. The von Pirquet and intracutaneous tests were both negative in a man dying of tuberculosis. These results are not different from those reported in great numbers and detail in the literature on this subject.

Many times parents will consent to the use of an ointment when they will not allow us to make an abrasion of the skin. For this reason we must know the relative value of the Moro test.

The consensus of opinion, based on many thousands of tests, is that first, the intracutaneous, and second, the subcutaneous-local tests are the most delicate, and when used indicate practically the absolute number of persons infected with the tubercle bacillus; third, in order of relative sensitiveness comes the cutaneous, of which the von Pirquet is the type; fourth, the subcutaneous; fifth, the percutaneous, of which the Moro is the type, and sixth, the conjunctival. The intracutaneous test may later become the most valuable one we have, as by using doses of increasing quantity we are able to determine the minimum amount which will cause a reaction.

The cutaneous test undoubtedly has value in indicating the character of the infection. Dr. F. M. Pottenger writes me:

> I believe that the cutaneous tuberculin test is of great value. A marked reaction, reaching its maximum within the first twenty-four or thirty-six hours, means that the patient is fighting an active infection. Of course this presupposes a patient with good reactive powers and that means a patient in fairly good condition.

Suppose we say that a prompt and intense reaction indicates a fresh invasion and a mild or late reaction a latent and old process. In young children the reaction indicates a comparatively recent infection, which is still active or only partially healed. The earlier the child becomes infected with tuberculosis the greater the danger of the infection causing clinical tuberculosis and death. In infancy tuberculous infection means tuberculous disease. But in later childhood the intensity of the reaction may not indicate the degree of infection, but rather the hypersensitiveness of the child.

We do not know how many tubercle bacilli it takes to infect a child. Webb of Colorado Springs says:

> We have ascertained that from virulent cultures inoculated subcutaneously twenty-five bacilli of the human type infected a guinea-pig, seventy-five of bovine type infected a rabbit, and 1,000 infected a calf. We have not yet determined the exact number of human tubercle bacilli that will infect a Rhesus monkey, yet the work we have done would indicate that a few hundred would suffice, and we may presume that children become infected by a similar number.[1]

Webb experimented on animals by injecting first one living tubercle bacillus and gradually increasing the number each week until 150,000 were inoculated into one guinea-pig. This animal was killed and found free from tuberculosis. The inoculations were continued on rabbits and monkeys, and when the results showed the method to be safe, seven children were treated in the same manner. These children were negative to the von Pirquet test both before and after the treatment. This would indicate true immunization.

The point which I wish to make from this is, many children in Colorado, and others living under favorable conditions, may be infected so slowly and gradually with the tubercle bacillus that they acquire immunity. In support of this view I wish to show that when massive infection occurs a condition of hypersensitiveness follows, and this favors the reaction.

> Römer has systematically tested guinea-pigs infected with varying amounts of tubercle bacilli of different virulence by performing weekly intracutaneous tests. The test consists in injecting into the skin 0.1 c.c. of tuberculin dilutions representing 0.02, 0.002, 0.0002, 0.00002, 0.000002 c.c. tuberculin. The area of induration is measured after twenty-four hours with a caliper and compared with the thickness of the skin in an uninjured area. An animal reacting to 0.02 and not to 0.002 c.c. of tuberculin is said to have I grade of sensitiveness; one reacting to 0.002 and not to 0.0002, II grade of sensitiveness, etc. By varying the amount of virulence of the cultures injected he has been able to study the variation in tuberculin sensitiveness during all grades of infection from rapidly fatal to mild ones ending in spontaneous recovery. Stated briefly, his results show that the more severe the infection the higher the grade of sensitiveness developed and the more quickly is this high point reached. Instances in which the disease remains localized show a strikingly low grade of sensitiveness.[2]

Römer used massive infection as compared with Webb's doses. These larger numbers of tubercle bacilli stimulate an overproduction of immune bodies with the result that the animals are hypersensitive to tuberculin. When only a few tubercle bacilli are inoculated, as by Webb's method, only sufficient antibodies are developed to neutralize the infection and there is no hypersensitiveness and no reaction.

1. Webb: Studies in Tuberculosis, Bull. Johns Hopkins Hosp., August, 1912, No. 258.
2. Hamman and Worman: Tuberculin in Diagnosis and Treatment, New York, D. Appleton & Co., p. 179.

SUMMARY

Children who are infected with large numbers of tubercle bacilli, as those living in the tenements of the cities or with active pulmonary cases anywhere, develop hypersensitiveness as shown by the tuberculin reaction.

When children have never been infected or in cases in which the number of bacilli received is very small and the child's resistance good, as in Colorado, they do not react and are either not infected or are immune.

In my cases, in which there seems such abundant opportunity for infection, I believe that many of the children have been immunized, but proof of this will require further study.

Possibly all tuberculosis is contracted in childhood, and from three-sevenths to six-sevenths of the population acquire immunity at this time, while the others succumb to the more acute conditions of childhood or later show the chronic pulmonary type of adults, which is believed never to occur except in those who have been infected and rendered partially immune in childhood.

In the prevention of tuberculosis we should aim to protect infants from all exposure and older children from massive infection. Moderate and gradual infection in older children probably insures immunity.

ABSTRACT OF DISCUSSION

Dr. C. G. Grulee, Chicago: One point is important and that is that the large proportion of infections in tuberculous individuals are present as the result of infection from individual to individual. We have hitherto underestimated the number of infections from individual to individual, and there can be no question that these very far exceed infections from milk.

Dr. Langley Porter, San Francisco: This is the one point that is most important in the whole discussion, that infection from individual to individual is the most common means of transmitting tuberculosis. In 100 cases of tuberculous meningitis in children, in every instance the disease was traced definitely to human infection. We have found that the majority of infections in children in the poor sections of San Francisco may be traced to grandparents. The old people said to have chronic asthma and winter cough, so-called, have in reality tuberculosis and infect their grandchildren and others living with them.

Dr. H. D. Chapin, New York: A most important point with reference to bovine and human tuberculosis infection is that if we attribute the infection largely to the bovine bacillus, many people are scared out of using milk, and if we are going to rule out milk we rule out the most valuable food that we have for the tuberculous patient.

Dr. E. Lackner, Chicago: In all the children entering our hospital we make the tuberculin test and we expected to find a much larger percentage of tuberculous children than we did find. The reports coming from the European clinics have been showing high percentages, even up to 80 per cent. of the children giving positive reactions to the tuberculin test. The children that we examined were from the "Ghetto" where we expect to find a great deal of tuberculosis, but we were agreeably disappointed to find so few suffering from tuberculosis. All of the children were carefully tested by the von Pirquet test. We tested about 4,000 children and not more than 20 per cent. were found to be tuberculous. These tests were all carefully made and were watched carefully.

Dr. J. I. Durand, Seattle: With reference to Dr. Manning's statistics showing such a low percentage of children reacting positively to tuberculosis tests when the parents

were tuberculous, I think that one explanation of this may be that in Seattle they have been carrying on a very vigorous campaign against tuberculosis and the people are very much alive to the question. In the clinics they examine every child for signs of tuberculosis and if any such signs are found the children are subjected to the von Pirquet test immediately. In the first place only about 50 per cent. responded to the test. In many cases the test was made only after finding tuberculosis in the parent or parents. In many instances in which tuberculosis was found to be present in a child, the parents were subjected to examination and in this way many cases of early tuberculosis were brought to light. I believe these statistics of Dr. Manning's are very much under what they will be found to be a year later.

DR. J. P. SEDGWICK, Minneapolis: With reference to making examinations of children when the parents are found to be tuberculous, this is a matter of equal interest to the internist. It will work to advantage the other way around. When a child is found to be tuberculous the parents should be examined, and in this way the frequency with which the disease is discovered in the parents is astonishing.

DR. R. B. SWEET, Fresno, Calif.: The question comes up whether we will find cases that react positively to the bovine test when they are negative to the human test. In spite of what has been said, wherever we detect slight signs of tuberculosis and there is a negative reaction to the human type of infection, I believe there might possibly be a positive reaction to the bovine type, and still the children may have a tuberculosis of the human type.

DR. T. C. MCCLEAVE, Berkeley, Calif.: With reference to bovine and human tuberculosis, it is conceded that tuberculosis of the human type is very much in the preponderance, and bovine type bacilli are rarely found in pulmonary tuberculosis, but certain forms of surgical tuberculosis in young children are quite commonly caused by bovine type infection. Men who have emphasized the importance of the human type have been wont to deplore any mention of bovine tuberculosis, for the reason, as they say, that it tends to divert the mind from the more important question of human infection, and some of them object to having it said that there is any bovine tuberculosis at all; but I think this attitude is fast disappearing, as in most recent papers on the etiology of tuberculosis the bovine type infection is generally recognized. I read a paper on this subject at the last meeting of this section, in which I showed that a certain proportion of tuberculosis came from milk, as tuberculosis of the glands, osseous structures and abdominal viscera, but no one claims that pulmonary tuberculosis comes from milk. The last speaker emphasized the fact that human infection is the great source of infection in children, and this is true; but it has been shown that from 12 to 25 per cent. of all tuberculosis in children is of the bovine type as found in the surgical conditions that I have mentioned. There is no reason for feeling that calling attention to one type of tuberculosis will divert our minds from the other type of the disease. Each type should be given the attention it deserves, and there should be no idea of conflict between the two.

DR. JOHN RITTER, Chicago: I am vitally interested when I hear statements of the value of the von Pirquet test as a diagnostic measure. One must not be led to believe when he gets a reaction which is positive that he is necessarily dealing with a case of tuberculosis or that a negative result absolutely interdicts the possibility of tuberculous disease, if such an opinion was based on a single test. In the Rush Medical College ambulatorium of the Tuberculosis Sanatorium we frequently find that a few of the children reacting negatively to the von Pirquet test reacted positively to a second or intracutaneous test, and I am quite sure that 80 per cent. of those reacting negatively to the von Pirquet test would react positively to a second test. As to the supposed prevalence of bovine pulmonary tuberculosis, the English commission appointed to investigate this subject found that it was very difficult to differentiate the pathology of human and bovine tuberculosis, but they expressed the opinion that tuberculosis of the human type, and especially pulmonary tuberculosis, predominated over tuberculosis of the bovine type, and they found that only 0.6 of 1 per cent of all cases of pulmonary tuberculosis are caused by the bovine germ. The human bacillus is usually responsible for tuberculosis of the pleura, larynx, and lungs, while the bovine bacillus causes tuberculosis of the peritoneum, glands, bones, skin, etc. Infection from individual to individual is the largest factor in the transmission of tuberculosis, usually from the old to the young, and when we accept this we will come closer to the solution of the problems involved. It has been my rule for years to say that an old person said to have asthma or chronic bronchitis has tuberculosis, and I have found that such persons have frequently infected all their grandchildren. This fact should be more emphasized and all children in such families carefully examined. As to the reaction following the application of tuberculin, in some cases it may appear in a few hours, in others at the end of twenty-four hours, and again in others at forty-eight and in some even as late as seventy-two hours. In cases in which the reaction comes up quickly it often indicates an active focus, but if the reaction is slow in appearing it may indicate a latent process. In some instances in which we do not get a reaction at the first, a second or intracutaneous application of a milligram of tuberculin is often followed by a distinctly positive generalized and local reaction.

DR. J. A. COLLIVER, Los Angeles: I have just returned from Prof. von Pirquet's kinderklinik where they are working on these tests. Prof. von Pirquet asked me to try his tuberculin skin reaction on different parts of the body. The hand, shoulder, back (cervical and lumbar region), knee, foot and the regular routine place on the forearm were used, and about 100 children were tested, making over 700 skin tests in all. I found that the reaction in the different parts of the body differed only slightly from that of the forearm—not enough to make it worth while changing the routine location. All children entering the hospital receive the von Pirquet test. When it is negative or doubtful, a Mantoux is made. This is more delicate and when positive brings out the other von Pirquet test. A watch screw driver is good or better than the von Pirquet drill. Each child receives a Pirquet test before each tuberculin injection. Accurate measurements and obervations of these tests are made every two hours for the first fourteen hours, then every four to six hours thereafter. There is often a traumatic reaction occurring in a few hours, but usually disappearing before the true reaction begins. Greatest intensity of reaction may be delayed forty-eight to sixty hours and be accompanied by lymphatic lines, enlarged glands and necrosis. The tuberculin skin test when positive in diabetic children is severe, characteristic, and often necrotic.

DR. G. H. CATTERMOLE, Boulder, Colo.: Something has been said with reference to Ghon's work. It should be remembered that in Germany practically all the milk is boiled and that may account, in a large measure, for the absence of bovine tuberculosis among the children in Germany. My object in presenting this subject was to stimulate interest in it, and urge you to make use of the tuberculin skin tests. We have been very much at sea as to the real value of the skin test. Tuberculin is also being used in this way in the treatment of tuberculosis, and I believed that a discussion of the subject would be interesting and instructive. I find that I react positively to the test, while my son who is 15 years old, born and raised in Colorado, reacts negatively. I have made the test on my forearm, as you can see, and also controls. In making these tests I used simply the linear incision with a drop of old tuberculin. These reactions illustrate very well the difference between the positive and the negative reactions.

Water Purification.—

"Come, sir, despatch; if thou couldst, doctor, cast
The water of our land; find its disease,
And purge it to a sound and pristine health,
I would applaud thee to the very echo
That should applaud again."—(From Macbeth.)

PNEUMONIA IN INFANTS

A CLINICAL STUDY OF HOSPITAL CASES *

HENRY DWIGHT CHAPIN, M.D.
NEW YORK

Most physicians who have had a large experience in treating the pneumonia of infants and little children in hospitals must be disappointed in the results when we consider that the nursing and appliances are usually most favorable for handling the disease. It may be of interest to glance at the reasons for this comparative lack of success and consider if anything can be done to improve results in institutional treatment.

For many years I have attended all varieties of pneumonia in the babies' wards of the New York Postgraduate Hospital, which is situated adjacent to a large and populous section of the city — said to be the most densely populated portion of the globe. Poverty and neglect are here common experiences in the life of many families. It is evident that very promising material for the treatment of such a depressing disease as pneumonia can hardly be expected from such a source of supply. So far as I can learn, my results are about the same as those of other hospitals dealing with a similar line of cases. Indeed, there seems to be a considerable similarity in the statistics of pneumonia in all ages and classes when studied in relation to the same type or class in a similar environment.

The cases on which this study is based were taken during October, November and December, 1914, and part of April, 1915, and may be considered as typical of the usual run of cases in the fall, winter and spring months. The high mortality in these and similar cases is due to three causes: (1) the poor general vitality of the class of children treated; (2) the fact that many bad cases that are not doing well at home are finally sent to the hospital in a late and dangerous stage of the disease; (3) a large proportion of the cases represent secondary or terminal conditions that are very apt to occur after any severe illness in the poorly nourished infant.

It is believed the cases here reported are fairly typical of the usual manifestations of pneumonia as seen in the average hospital for infants. The study includes 50 cases, 23 of lobar pneumonia and 27 of bronchopneumonia. In this series, 5 patients with lobar pneumonia died, giving a mortality of 21 per cent., and 13 with bronchopneumonia died, showing a mortality of 48 per cent. While the mortality in the lobar pneumonia is higher than usual in this class of hospital cases, the deaths from bronchopneumonia were rather lower. In a recent series of cases reported by the Babies' Hospital[1] (N. Y.), among 51 patients with lobar pneumonia 5 died, giving a mortality of about 10 per cent., and of 116 patients with bronchopneumonia, 62 died, with a mortality of 53 per cent. In a record of 1,000 cases, running through six years, Pisek reports a mortality of 34.3 per cent. in the babies' wards, including both varieties of pneumonia, and Holt has reported a mortality of 33.1 per cent. among 410 cases at the Babies' Hospital. These figures, I believe, represent a fair average in the results obtained in the types of pneumonia usually seen in hospitals that draw largely from a poor and neglected class in densely populated communities. When influenza is prevalent, the type of pneumonia is sometimes markedly affected, and I believe this was the cause of the rather high mortality in the lobar pneumonia cases.

It is not always easy clinically to differentiate lobar from bronchopneumonia in the early years of life, particularly in the hospital, as the patients have usually been ill for some days, and often much longer, before admission. In the lobar form, the diagnosis was made on the history of an acute onset, the rapid and fairly extensive development of an area of dulness, and the high, fairly continuous fever which suddenly declined. When the history recorded a slow inception, with a remittent fever, not constantly so high, with disseminated patches especially noted over the posterior areas of both lobes, it was considered to be bronchopneumonia. Even when a large portion of a lobe gave the physical signs of consolidation, daily examinations usually showed that this was due to a gradual confluence of a number of smaller areas, which aided in deciding on the diagnosis. It must be confessed, however, that occasionally it is impossible to make a clear differentiation between these two types of pneumonia in children during life. We have had necropsies in which both kinds were present in the same patient. It is probable that some of the cases here classed as lobar pneumonia were really of this mixed form.

There is another type of pneumonia almost universally seen in hospital infants who have suffered from prolonged or exhausting diseases, namely, hypostatic pneumonia. This form, which is practically a terminal condition, involves the posterior parts of both lungs and is not usually recognized during life. It is especially constant in atrophic babies kept too long in institutions, but a necropsy will show this condition in almost every infant who has long been sick.

Without attempting a summary of all the clinical features of the cases reported, some of the salient points will now be noted. In the 23 cases of lobar pneumonia, the ages of the patients were the following: 4 months; 8 months; 10 months; 13 months, two cases; 14 months, two cases; 18 months; 20 months; 22 months, two cases; 24 months; 25 months; 28 months; 30 months, three cases; 3 years, three cases; 5 years, three cases. The ages of those who died were: 10 months, 13 months, 14 months, 22 months, 24 months.

A noticeable feature was the high temperature shown in many of the cases — in three the temperature was 104 F.; in one, 104.2; in one, 104.4; in one, 104.8; in two, 105; in one, 105.2; in one, 105.6; in two, 106, and in one, 106.4. Four of those who died had temperatures ranging from 105 to 106, but in one fatal case no temperature higher than 102.8 was noted. Recovery can ensue after a very high temperature in this disease, as it took place once with 105, again with 105.2, again with 105.6, and finally with 106.4. Most of the cases, as is usual in lobar pneumonia with children, bore the high temperature well up to 105, but beyond this point the symptoms were much aggravated, especially the rapidity of the respiration. In some of the cases there was marked fluctuation in the daily temperature before the final fall.

The blood findings in seventeen cases are given in Table 1.

These showed a more or less marked leukocytosis in all but one case in a poorly nourished baby of 22 months who died at the end of eight days with every

* Read before the Section on Diseases of Children at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Twenty-Sixth Ann. Rep., Babies' Hospital, New York, Sept. 30, 1914.

evidence of poor resistance. There was also a polynuclear increase, as is usual with coccic infections. When we consider that the polynuclears in early infancy may run as low as 18 per cent. and at from 1 to 5 years average from 35 to 52 per cent. it is seen that the relative increase has a greater significance than if it occurred at a later age.

The duration of the disease was very variable; the shortest attack was 7 days and the longest 25 days. The physical signs of consolidation nearly always lasted several days after the drop in temperature that denoted the crisis. In some of the longer cases, there

TABLE 1.—BLOOD FINDINGS IN SEVENTEEN CASES

Age	Leukocytes	Polynuclears	Lymphocytes
8 mos.	28,700	70	30
13 mos.	22,800	70	30
13 mos.	30,000	65	35
14 mos.	34,800	78	22
14 mos.	27,500	82	18
20 mos.	17,500	71	29
22 mos.	6,800	63	37
22 mos.	25,400	74	26
24 mos.	23,100	76	24
25 mos.	18,000	52	48
28 mos.	20,800	58	42
30 mos.	34,300	75	25
3 years	28,600	83	17
3 years	34,600	74	24
5 years	32,750	76	24
5 years	19,100	79	21
5 years	14,100	73	27

would be a drop of temperature and in a few days another rise, due to extension to an adjacent lobe. This is a not infrequent characteristic of this disease as it is seen in the hospital.

The twenty-seven cases of bronchopneumonia occurred at the following ages: 1 month, two cases; 6 weeks; 4 months, two cases; 7 months, two cases; 8 months, two cases; 9 months; 10 months, four cases; 11 months; 13 months; 15 months, two cases; 16 months, three cases; 18 months; 3 years; 4 years, three cases; 5 years. The ages of those patients who died were: 1 month, two cases; 6 weeks, 4 months, 7 months, 9 months, 10 months, 15 months, 16 months, two cases; 18 months, 3 years, 4 years. As would be expected, the heavy mortality was in the younger patients, ten of the deaths occurring in children under 2 years. Over half the cases were accompanied by high temperatures, and there were wide fluctuations in many of them. The temperature in seven cases rose to between 104 and 105, seven between 105 and 106 and two rose above 106. The highest was 106.8 in a baby of 16 months who died. In eight of the fatal cases the temperature was very high, but this was also true in seven that survived, in four rising above 105 and in one reaching 106, in a baby of 10 months. These high temperatures were accompanied by other evidences of a severe grade of infection, and very wide fluctuations were also a bad omen.

In nine of the cases, the blood was examined with the results recorded in Table 2.

In these few cases, there was not so large a proportion showing high leukocyte count as in the lobar pneumonia cases, but the polynuclears averaged as high.

Most of these patients had a persistent, hacking cough that was very troublesome at night. Unless relieved by occasional sedatives, the vitality and resistance of the child suffers much from this symptom. As in lobar pneumonia, the physical signs frequently persisted after the temperature had dropped to normal. In most of the cases with recovery the disease lasted from two to four weeks.

The treatment of these cases was based on the character of the disease and condition of the patient. The management was naturally stimulating and supporting. The drugs principally employed were strychnin, caffein, aromatic spirits of ammonia and occasionally digitalis and nitroglycerin. For quick hypodermic effect, camphor in oil and the benzoate of soda and caffein were depended on. When a constant, hacking cough prevented rest and sleep, small doses of codein sulphate were given as indicated. In all cases, these or other drugs were given singly, according to special indication, and never combined in mixtures.

One of the greatest difficulties in handling these infants, especially those on the bottle, was in properly nourishing them. In most cases they were suffering from digestive disturbances due to careless or improper feeding before admission. This is very apt to occur in this class of babies and has much to do with the high mortality. Again, as they are evidently weak, the mother or nurse mistakenly gives too strong feeding mixtures for their digestive capacity. The result is apt to be diarrhea or distention of the bowel by gas. The latter is a very serious complication in pneumonia of infancy as the action of the lung is thereby much embarrassed. The bowel was usually cleared with a dose of castor oil, followed, at first, by rather weak feeding mixtures to test the digestive capacity of the stomach and bowels. In some cases it was necessary to stop all milk for a short time, using gruels, meat broth or egg water, and then tentatively starting with a high dilution of the milk. Sometimes small amounts frequently given were found best, and in others more prolonged rest of the digestive tract worked better. The cases in which diarrhea and distention persisted, in spite of careful dieting, were nearly always fatal. The proper feeding of babies with pneumonia, especially when they start with digestive troubles, tests all the skill of the physician.

The special handling required by these cases is shown in their reaction to the cold-air treatment now

TABLE 2.—BLOOD FINDINGS IN NINE CASES

Age	Leukocytes	Polynuclears	Lymphocytes
10 mos.	18,400	80	19
11 mos.	15,100	64	36
13 mos.	19,200	60	40
15 mos.	23,900	78	32
16 mos.	14,660	67	33
18 mos.	9,000	55	42
4 years	11,900	68	32
4 years	10,600	68	32
5 years	25,300	87	13

so popular with some. That vigorous infants with lobar pneumonia respond well to the cold-air treatment is frequently true. Howland and Hoobler[2] have shown that cold fresh air in patients with active pneumonia always produced a rise in blood pressure. Whether increased blood pressure is always desirable, and under what conditions it is to be sought, seems to be uncertain. In my experience the cold-air treatment is not applicable to the bronchopneumonia of infants. Plenty of fresh air must always be employed, but cold surroundings are apt to depress too much. Two years ago I gave this question a fair trial by treating my pneumonia cases in one ward in which all the large windows were kept wide open, day

2. Howland, John, and Hoobler, B. Raymond: The Effect of Cold Fresh Air on Blood Pressures of Children and Young Adults, Am. Jour. Dis. Child., November, 1912, p. 367.

and night, in winter weather. Most of the cases of bronchopneumonia and many of the lobar forms in feeble infants did not do well under this management, which was discontinued after several months' trial. The aim is now to have a steady supply of fresh, outside air delivered into a ward that has been moderately warmed, which has proved more satisfactory.

If better results are to be obtained in the hospital treatment of pneumonia in infants, efforts must be made in two directions: 1. We must try to have them admitted earlier. 2. Patients must be promptly discharged as soon as resolution has taken place. If home treatment is impossible, the baby should be sent to the hospital when the disease is first recognized, before bad feeding, poor air and faulty hygiene have lessened the chances of recovery. Dispensary doctors, social workers or visiting nurses can do effective work in this direction. If the baby is moribund, with few hours to live, it had better be kept at home rather than have the last moments made uncomfortable by transit. Some of my patients were in this condition when admitted. A very wide experience has taught me that sick infants, especially those having pneumonia, should not be retained in hospitals any longer than is necessary to get over the acute symptoms. If kept too long, there is constant danger of relapses and reinfection. While this can be guarded against by careful nursing in small, well-ventilated wards, as a rule the babies recover much quicker outside of an institution. It is most difficult to avoid various secondary and cross infections in weak infants who are collected together in one place. My plan is to remove these infants from the hospital as soon as the acute symptoms have subsided and board them out in private homes in the country under the constant supervision of a doctor and nurse who are paid for this work. Only in this way have I been able to prevent many relapses, and make permanent the work of cure in babies who have been sent to the hospital from homes of ignorance and poverty.

51 West Fifty-First Street.

ABSTRACT OF DISCUSSION

Dr. F. C. Neff, Kansas City: In the paper Dr. Chapin spoke of the importance of the feeding in these infants with pneumonia. During the past two years I have had occasion to employ wet nurses in the feeding of certain infants suffering from pneumonia, babies that had previously done perfectly well on the bottle. Because of the seriousness of pneumonia in infancy, I believe that breast milk increases the chances of a favorable outcome.

Egyptian Medicine.—The Egyptians were probably the most healthy people of history. Herodotus spoke of them as the healthiest nation, and Diodorus said that from the king to his humblest subject the mode of life in Egypt seemed as if ordered by the physician rather than the lawyer. The Egyptians stayed off disease by a reverent attention to the vitality of the body. They were the first people to master the question of antisepsis. By cassia, frankincense, and myrrh they preserved the body from microbes of dissolution. But whether it was that their vitality shielded them during life from notable microbic attack or some other reason prevailed, they confined their use of antiseptics to the preservation of the dead from dissolution and not the living from disease.—G. T. Wrench: Lord Lister, His Life and Work.

THE ETIOLOGY AND TREATMENT OF OZENA

A PRELIMINARY REPORT *

HENRY HORN, M.D.
SAN FRANCISCO

Just before the outbreak of the European war in July, 1914, Guggenheim of St. Louis, Murray of Minneapolis, Glogau of New York, and I embraced the opportunity to study, in the private laboratory of Hofer of Vienna, his work on the etiology of ozena.

His positive statements that the *Coccobacillus foetidus ozaenae* of Perez was the true and only etiologic factor in this disease, and his enthusiasm over the results of treatments by vaccines under Kofler in Chiari's clinic led us all to the determination to investigate this matter on our return to America.

As is well known, the superficial observation which is afforded the onlooker in a large clinic, where a series of cases — perfectly familiar to the experimenters, but new to the observer — is shown, is extremely unsatisfactory, and any personal conclusions are therefore unfair to the series under observation. The brilliant cases are shown, the poor cases usually slighted. Even daily observations of crust formations and degree of fetor vary greatly with different observers, and the detailed report of cases made by Hofer does not convey the same impressions as a similar but smaller series would to the personal observer.

To read the articles which Hofer has published, one would conclude that all the work has been a steady progression toward the desired end. Such is not the case, because in conversation with him, and with others in Vienna, who are familiar with his work, many difficult obstacles have had to be surmounted.

It is not fair, therefore, to the general medical public and to the specialists of America, to give the impression that the millenium in the treatment of ozena has arrived, that the isolation of the etiologic organism is easy and that the preparation of the vaccines is a matter of routine. Such is far from being a true statement of the case, and any one who empirically treats all cases of ozena with vaccines made from subcultures of strains furnished by Hofer is doomed to bitter disappointment.

It is the object of this paper to sound a note of warning and to make some suggestions, which are the result of constant experimentation along these lines during the last twelve months.

If we can presently put into the hands of the medical public a specific for this dreadful disease, it will almost rank in value with the discovery of the antitoxin of diphtheria.

True, it is not a matter of saving life; but those of us who have treated the victims of this most disgusting of all diseases which afflicts otherwise normal individuals know that the gratitude of these patients for a restoration from their former social ostracism is as great as the gratitude of the mother whose child is restored to health.

In debating this subject let us ask ourselves the following questions:

1. Is the Perez bacillus the true and only cause of ozena?

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

2. Has not the undoubted cure of certain cases with vaccines made from the Perez organism and the undoubted failure to cure in other cases, clinically similar, weakened our concept of the clinical entity of clinical ozena?

3. Is it not possible that cases of ozena clinically identical may be cured by several different vaccines?

4. Shall we not have to revise somewhat our clinical classification of ozena?

5. Is the information already at hand sufficient to enable us to produce a successful vaccine?

A close analysis of the literature, already put out by Hofer, would seem to indicate that the questions just enumerated have all been answered. Such is not the case. During our laboratory work with Hofer he constantly reminded us that the isolation of the organism was an exceedingly difficult task; that it had taken him several years to gain his present results, and that many of his vaccine experiments for one reason or another had been failures.

It is also possible that in the short time which we spent in his laboratory many essential details were overlooked.

First, then, it seemed logical to repeat some of his principal experiments on rabbits with the cultures furnished by him, and I present for consideration a series of rabbits' heads prepared in Kaiserling solution and mounted in glycerin.

The necropsies were made as soon after death as possible, usually within two or three hours. Animals which had to be killed were struck across the base of the skull in order to obviate any congestion of the nose due to the administration of chloroform or ether. The heads were first skinned and the skull sawed through exactly in the median line, so that the saw split apart the two upper incisor teeth. The lower jaw was not saved. The skull was opened like a book and usually one nostril was found completely closed by the septum while the other side was free. The closed side was opened with a sterile knife, and any bacteriologic examination could then be made without fear of contamination.

The method of dosage was as follows: An ordinary agar slant was freely inoculated with a platinum loop of pure culture of the growth to be experimented on. This was incubated for twenty-four hours, and then 10 c.c. of sterile physiologic salt solution added and the growth brought into a suspension. The dosage was taken from this suspension and injected into a vein of the ear.

EXPERIMENTS WITH RABBITS

RABBIT 1.—Hofer's original cultures, Strain M. Oct. 17, 1914, Injection 1, 0.5 c.c. of live culture. October 23, Injection 2, 1.5 c.c. of live culture. October 30, rabbit killed.

Necropsy.—General necropsy negative. The anterior turbinate on each side distinctly but slightly congested as compared with the posterior turbinates.

RABBIT 3.—Hofer's original cultures, Strain M. In this experiment the pure cultures were transferred directly to the given amount of water and injected as follows: Oct. 23, 1914, Injection 1. One loop of pure culture added to 5 c.c. of water, and 1 c.c. of this suspension injected. October 27, Injection 2. Two loops of pure cultures added to 5 c.c. of water, and 1 c.c. injected. November 4, Injection 3. Three loops of pure cultures added to 5 c.c. of water, and 2 c.c. injected.

Necropsy.—Nov. 23, 1914, general necropsy negative. Anterior turbinate congested with small strings of whitish pus throughout. In left anterior turbinate, collection of whitish pus pockets. No marked atrophy. From this pus a polymorphous gram-negative organism was obtained which answered all the microscopic characteristics of the Perez bacillus but gave no distinct odor. Agar slants inoculated with heart blood of this animal remained sterile after twenty-four hours' incubation.

RABBIT 5.—Weight, 3,195 gm. Hofer's original cultures, Strain M. Nov. 20, 1914, Injection 1. Six loops from original pure cultures in 1 c.c. of water, and injected. November 25, weight 2,860 gm. Loss, 335 gm. in five days, marked loss of appetite. Rabbit has marked snuffles; does not move about. Apparently quite ill. Injection 2: Agar slant inoculated freely from original cultures and grown for twenty-four hours. One c.c. added and emulsion made. This entire emulsion used as injection. November 27, weight, 2,620 gm. December 17, rabbit has regained some appetite and runs about cage. Still very thin. December 23, 5 c.c. of water added to subculture grown on agar through four generations. Injection 3: 2 c.c. of the foregoing injected. Feb. 23, 1915, rabbit died. Very thin, large ulcerations on hind legs and around rectum.

Necropsy.—General necropsy negative. Marked atrophy of posterior turbinate with deposits of pus. Anterior turbinate congested, somewhat atrophic.

RABBIT 9.—Hofer's original cultures, Strain G. Five c.c. of salt solution added to twenty-four-hour growth on infusion agar. Dec. 16, 1914, Injection 1: 2 c.c. of the foregoing. December 30, rabbit died.

Necropsy.—Rabbit very thin. Entrance to nose blocked with pus. Necrotic areas in lobes of ears. General necropsy negative. Intense congestion in anterior turbinates. Very little free pus. Posterior turbinates dark brown.

RABBIT 10.—Cultures isolated by Dr. Klenk, Minneapolis. Five c.c. added to twenty-four-hour growth on plain agar. Dec. 15, 1914, Injection 1: 2 c.c. of the foregoing injected. December 15, rabbit died twelve hours after injection.

Necropsy.—General necropsy negative. Anterior turbinate intensely red and congested, with dark red patches in middle turbinate. Posterior turbinate red and angry looking, with small area of intense congestion. Blood taken from heart and grown in Rosenau's glucose and agar tubes shows many small colonies of gram-negative, small fairly constant cocci.

RABBIT 7.—This rabbit was injected with killed organisms of the original Hofer strain for the purpose of producing an agglutinating serum. Five c.c. of salt solution was added to twenty-four-hour growth on agar and killed by heating in water bath to 68 C. for one hour. Dec. 7, 1914, Injection 1: 2 c.c. of the foregoing. December 17, Injection 2: 3 c.c. December 23, Injection 3: 4 c.c. Jan. 2, 1915, rabbit died.

Necropsy.—General necropsy negative. Both anterior turbinates at anterior and posterior pole intensely congested. Middle portion pink. Posterior turbinates somewhat atrophic. Some free pus in nose.

RABBIT 6.—Experiment exactly the same as in Rabbit 7. Nov. 27, 1914, Injection 1: 1.5 c.c. of the foregoing killed organisms. Immediately after injection, the rabbit showed evidences of lung embolism or infarct and seemed about to die, lay on side, was unable to stand. Partial recovery after several days. December 7, rabbit killed. Very thin, congestion of the left lung. Eyes almost closed with pus. Some secretion in nose. Nose, right side: Anterior turbinate pinkish, very dry, no secretion. Posterior turbinate dark brown, no secretion. Left side: Posterior turbinate intensely congested and filled with fresh blood clot. Posterior end of the anterior turbinate intensely congested and filled with blood clot.

COMMENT

Other series of rabbits were inoculated with killed cultures exactly after the method employed by Hofer, but up to the present time, I have been unable to obtain an agglutinating serum.

The rabbits did not lose weight during these experiments, and the appetite remained good. Various changes were made in the dosage, length of time between injections, etc., but the serum obtained would agglutinate neither with Hofer's original cultures nor

with the cultures made from undoubted clinical types of ozena.

We can only conclude then, that the intravenous injection of live cultures in very large doses will kill rabbits in from twelve to twenty-four hours, the only necropsy finding of any consequence being the selective action of the organism on the mucous membranes of the turbinate bones of the nose.

In smaller doses, intense congestion, first of the anterior turbinate and later of the posterior turbinate, can be brought about. If this process is allowed to continue, pus forms in and about the turbinated bodies, finally entirely blocking up the nares.

In some of the rabbits which withstood the large doses for a comparatively long time, marked atrophy of the turbinates was noted. The amount of congestion seems to vary with the size of the dose and the virulence of the strain. Thus, in Rabbit 10, prepared from a strain isolated in America and from which comparatively few subcultures had been made, the greatest effect was seen.

Naturally, this series is far too small on which to base other than confirmatory evidence. Many side lines of experimental study presented themselves, and these are now being carried on.

DETAILS OF THE WORK

With the exception of a short article by Guggenheim, nothing has appeared to my knowledge in English concerning these investigations, so that it might be well briefly to review the details of Hofer's work before we pass to the therapeutic use of the vaccines.

The subject of the etiology of ozena has been worked on for years by different observers in various parts of the world. As is well known, the disease is far more common in Europe than it is in America. The international investigation which was started two years ago by Mayer fell flat in the United States, probably because the men saw so few cases that they had very little interest in the subject.

Every specialist, however, has one or more such cases a year, and as a usual thing, a general lack of knowledge on the subject, combined with the general pessimistic view of the results of treatment, causes him to slight or probably not treat the case at all. Such an attitude is now no longer defensible. In properly prepared vaccines we have a potent factor in our hands for vast improvement. We can promise not only that the odor will disappear but also that the formation of crusts will be reduced to a minimum.

In this paper all other forms of atrophic rhinitis, syphilis, tuberculosis, etc., will not be mentioned. We are dealing only with the typical clinical picture of ozena, which is familiar to all rhinologists.

Stripped of all unnecessary details, the method of isolation is as follows:

A crust is taken from the nose, preferably at the anterior end of the middle turbinate. This is dropped in a bouillon tube and incubated for exactly twelve hours. This period of incubation is a very important point, for it has been found that a lesser period does not give the organisms time to grow, and an incubation of more than twelve hours causes such an overgrowth of the accompanying organisms that isolation of the Perez bacillus is impossible.

At the end of twelve hours, one drop from this bouillon tube is spread over from three to five agar Petri dishes. These are incubated for twenty-four hours, and then the separate colonies are fished and transferred to agar slants.

In fishing for the colonies a great deal of experience and judgment is necessary, those conforming to the characteristics of the staphylococcus, *Micrococcus catarrhalis*, streptococcus, *Bacillus proteus* and other well-known forms are not transferred. There is nothing characteristic about the colonies. They are usually small, moist and transparent.

After twenty-four hours on agar slants, a characteristic odor is usually developed by which the organism can be fairly well identified. There is also nothing characteristic of the slant growth, the pure culture looking much like ordinary staphylococci. The presence of a marked odor is very variable. It is not the marked sickening odor of ozena in the patient, but a milder, though still characteristic odor.

The final test of agglutination, which Hofer says is simple, has not proved so, either in my hands, or in the hands of several trained bacteriologists.

I have followed out exactly the technic of Hofer, as well as several other details suggested by bacteriologists who have been interested in my work, but so far I have been unable to secure any satisfactory agglutinating serum even in very small dilutions.

The cause of this failure I am unable to explain. It is possible that the subcultures which were made from the original Vienna strains were so attenuated that they had no effect on the rabbit. Agglutinating serums prepared from our own cases are now being experimented with, but so far no definite conclusions can be drawn.

The injections of these organisms into the rabbit and their subsequent recovery from the nose I have been repeatedly able to carry out, and these experiments seem free from criticism.

TREATMENT

This, then, brings us to the most important part of the subject, namely, the treatment. One fact stands out without question, and has been proved so often that it needs no support. Cases which clinically would be classed as true ozena have been vastly improved temporarily and possibly permanently by the administration of several of the stock vaccines on the market, which usually contain the Friedländer bacillus, *Micrococcus catarrhalis*, pneumococcus and streptococcus.

This may raise two points: 1. Is ozena possibly a mixed infection? 2. Are there certain types which cannot be clinically differentiated and of which the Perez bacillus is not the etiologic factor? It would also seem possible that some of our many failures are due to the fact that the growth of the various extraneous organisms in the nose are for the moment more important than the Perez bacillus and that perhaps our results would be better if we preceded the treatment by the use of a stock mixed vaccine, to be followed in turn by a vaccine made from the Perez organism or possibly, as we are now considering, a combination of the Friedländer bacillus, *Micrococcus catarrhalis*, pneumococcus and streptococcus, with a vaccine made from the mixed strains of the Perez bacillus.

In this paper I am not going to quote histories of cases treated with the stock mixed vaccines. I am, however, going to report a few cases in which the Perez vaccines were used which tend to show, although they do not prove, the great value of this remedy in the treatment of ozena. What I do particularly want to show are the sources of error which may creep in and which are to be avoided.

The detailed report of Hofer's cases would lead one to suppose that there is nothing more to be desired.

My experience in America and the experience of two or three others leads us to suspect that either we are not in possession of full details or that our technic has not been developed to the highest possible point.

It should also be remembered that in the series of unbroken successes which Hofer reports, nothing is said of the possibility of recurrence after the treatment has been stopped. Judged by our small experience, this is something which must be very carefully considered but which does not in any way mitigate against the value of the treatment. In other words, my position is this, that although I admit the fact that the investigations of Hofer are practically free from criticism, I am not at all certain that cures from the vaccines as used by him will prove to be absolute and permanent.

In spite of the fact that the preparation of autogenous vaccines in these cases is a very difficult thing, it will probably prove that this is the only method by which we can be certain of a good result. Hofer himself mentions this fact in his last article, but very truly adds that in clinical practice this is an impossibility. He also makes the point, which we have also proved to our satisfaction, that in cases which clinically are undoubtedly ozena, we are unable to isolate the Perez bacillus, but an administration of the stock Perez vaccine will either cure or greatly improve the case. This simply proves that there are certain bacteriologic conditions over which we at present have no control.

The method of administration of the vaccines as worked out by him in his last article is of great importance and covers the ground so completely that I have nothing of value to add.

Most of the vaccines used by him in his clinical work are made from seven or eight different strains, to which has been added one strain of the Perez bacillus which occurs normally on the mucous membrane of the nose of dogs.

The various strains vary extraordinarily and are difficult to preserve. They must be carefully protected from heat and light. For the best results, careful watch must be made for the constitutional symptoms, which are less marked with old vaccines than with those freshly prepared.

The clinical manifestations are the best guide to dosage, and a period of at least one week should intervene between injections. The dose varies with every vaccine and every patient. An initial dose of 50 million, doubling until the proper constitutional symptoms develop, is about correct.

The general reactions are rise of temperature, loss of weight, malaise and vomiting. The local reactions are redness and swelling around the injection and swelling of adjacent glands. Symptoms referable to the nose are coryza, free discharge from the nose, sensations of heat and fulness over the bridge from the mucous membrane.

These local reactions in the nose are what we should endeavor to produce if the full effect of the vaccine is desired. As a usual thing, the patient is instructed not to douche the nose until it becomes absolutely necessary; in this way, a good idea of the amount of improvement can be gained.

Notes should be kept on: (1) the intensity of the odor; (2) condition of the accessory sinuses; (3) condition of the crusting, and (4) the improvement in subjective symptoms.

The improvement is usually noted by the patient after the first dose. The parents notice the improvement in the degree of odor. The crusts blow out more readily, and the feeling of tightness across the forehead is improved. From five to fifteen injections are considered necessary for a complete cure, and the patient must be carefully watched for a relapse, when the treatment should again be instituted.

I give below a few typical case histories which show the undoubted beneficial effects of the vaccines. None of these patients do I consider cured, but the marked improvement warrants one in continuing treatment.

CASE HISTORIES

CASE 1.—M. G., woman, aged 19, family history negative, had odor and discharge from nose for thirteen years. Both nasal spaces very large with great atrophy. Large greenish foul-smelling crusts over entire nose, especially at anterior end of middle turbinate. Ethmoids opened. Six months' treatment with ordinary autogenous vaccines without improvement. Dionin treatment of no avail. A proprietary mixed nasal stock vaccine used three months without any improvement. Starting April 1, 1915, Perez vaccine of mixed strains used for twelve injections with vast improvement. Some slight crusting and slight odor still perceptible. Subjective improvement well marked. Patient well satisfied. Cultures from nose demonstrated Perez bacillus in typical form.

CASE 2.—M. Z., woman, aged 32, Hungarian. Typical ozena since childhood. Treated for years in European clinics without improvement. Typical ozena, fully developed atrophy, horrible stench. Perez bacillus demonstrated. Two injections of 100 million caused odor to almost entirely disappear. Patient lost from sight.

CASE 3.—S. P., woman, aged 27, German, first seen in 1912, family history negative. Typical ozena with pansinusitis. Treatment for three years by surgical means. All sinuses opened, including right Killian with great improvement. Odor and crusts would not improve. Pus condition 50 per cent. better. Stock mixed vaccines used over period of months as well as autogenous vaccines with slight success. Principal complaint, blinding headaches and odor. Treatment with autogenous vaccine of Perez bacillus showed immediate and profound improvement. No odor at any time, no crusts, headaches entirely gone. Patient washes nose once a week, formerly twice a day. Case considered cured.

CASE 4.—J. M., boy, aged 9 years, Spanish, complained of frontal headaches and odor and crust blocking from right side. Examination of mother shows typical ozena, brother two years younger also typical ozena. Has always played with dogs. Examination of right side reveals profound atrophy, greenish crusts on middle turbinate, odor foul. Left side free. Perez bacillus isolated in pure culture. Treatment over three months with a proprietary mixed nasal vaccine shows some improvement but odor always the same. Perez vaccine, mixed strains begun April 10 and continued to present time. Some improvement in odor, great improvements in crust formation. Headaches gone. Still under treatment. The improvement with the Perez vaccine greater than with any previous form of treatment.

CASE 5.—H. M., boy, aged 8 years, brother of J. M. History exactly the same. Nasal condition clinically identical except the left nostril is involved. Could not isolate the Perez organism. Even very small doses produce violent headaches, high temperature, vomiting and malaise for several days. Improvement slight, if any. Probably Perez bacillus not the only organism involved. Still under observation.

CASE 6.—M. deV., girl, aged 16 years, of Italian parentage, had negative family history. Odor very disagreeable to family. Headaches especially in frontal region. Right side large greenish foul-smelling crust blocking entire nostril. Perez organism not yet isolated. Marked improvement after second injection. Treatment for three months. Improvement very marked. Crust almost gone. Odor disappeared. Just returned after two weeks' absence with marked odor. Patient still under treatment.

CONCLUSIONS

I think we are in a position to admit the following facts:

1. The *Coccobacillus foetidus ozaenae* Perez, as isolated by Hofer, has answered all the bacteriologic requirements necessary to establish its identity as the etiologic factor in ozena.

2. The isolation of this organism is attended with considerable difficulty.

3. The production of agglutinating serum in rabbits is an exceedingly difficult task.

4. The preparation of autogenous vaccines in every case is very difficult, if not impossible.

5. At present mixed vaccines made from various strains of Perez bacillus is the most practical method of treatment which is now available.

6. It may be necessary to precede or combine with the treatment the vaccines made from the organisms which are usually present in combination with the Perez bacillus.

7. It may be possible that there may be two or more types of ozena bacteriologically different but clinically identical.

209 Post Street.

ABSTRACT OF DISCUSSION

DR. W. T. CUMMINS, San Francisco: I can discuss Dr. Horn's paper only bacteriologically. I had the opportunity a year ago of hearing a paper on ozena in Vienna, and I made several interrogations relative to the bacteriologic side of it. I must confess that a certain amount of skepticism was engendered at that time, but at least a part of it has disappeared since knowing of Dr. Horn's work and hearing his paper. There is one rather inharmonious point, I might say, in the lack of agglutination in Dr. Horn's work compared with that of Dr. Hofer. It is rather remarkable if they have the same organism. We know that some organisms are not capable of producing agglutinins in the animals injected. The rabbits injected by Dr. Hofer showed agglutination, and if Dr. Horn had used a larger number of animals it is possible that some agglutination might have been demonstrated.

There is one point that engendered a certain amount of skepticism in my mind, although it may not be important, and that is the subject of pleomorphism. There are certain organisms that are pleomorphic, and it is said that this organism may be rod-shaped or coccoid. This condition is noted with a few intestinal bacteria. It seems that this organism of ozena belongs to the Friedländer group, to which the bacillus of rhinoscleroma is presumed to belong. There is one very strong point indicating the specificity of this organism, and that is the localized reaction in the nose after intravenous injection in rabbits. Dr. Horn's specimens certainly show well-marked nasal lesions indicating selective bacterial activity. I must say that the technic is quite laborious, and I agree with Dr. Horn and the other gentlemen who have worked it out that the ability to detect the odor, and the tedious fishing of colonies from the original plates require an unquestionably long time. I am glad to state that my original skepticism has been somewhat modified, but I still possess a certain degree of it relative to the etiologic position of this organism in ozena.

DR. GEORGE H. WILLCUTT, San Francisco: I had the opportunity in Vienna of seeing some of the work done along this line by Dr. Kopfler in the Chiari Clinic. I can agree with Dr. Horn that many cases were not benefited; in fact, only about 50 per cent. showed any improvement, and in that 50 per cent. there were many relapses. The bacteriologic examinations made by Dr. Hofer showed the *Bacillus mucosus*, sarcinae, and the *Coccobacillus foetidus ozaenae*, and at that time he was not sure that the condition was due to the coccobacillus alone. He made a suspension, as Dr. Horn has very well explained, and began his injections with about sixty millions, increasing the amount weekly until he reached about six hundred millions. Following the injections he would at times find local reactions and also a general reaction occasionally. One of the local signs Dr. Horn failed to mention was the increase of the odor in a number of cases. The odor was markedly increased in some cases after the first injection. The pharyngitis which is usually present in these cases showed improvement before the nasal condition, and after one or two injections disappeared in most of the cases. Kopfler injected some patients fifteen or twenty times, while others showed some improvement after a few injections, and control examinations made two or three months later showed improvement in the local condition, the crusts having disappeared; there was more discharge from the nose and the mucous membrane was more normal. However, 50 per cent. of the patients treated did not show a cure.

DR. WILLIAM R. MURRAY, Minneapolis: The etiology of ozena is a subject that has been of great interest to the medical profession for many years. Lowenberg, Fraenkel, Paulson, Hajek, Abel, Perez, and others have described micro-organisms which they have considered the cause of ozena. The importance of this subject was emphasized in 1911 when an international collective investigation of ozena was begun under the direction of Prof. Alexander of Berlin. This committee is engaged in studying the researches of Perez, who in 1899 described an organism which he believed to be the cause of ozena. Perez's findings have recently been confirmed by Hofer of Vienna.

A year ago I obtained a culture of the Perez bacillus from Dr. Hofer and what work I have done, in association with Dr. Larson, university bacteriologist, has been in connection with the use of a Perez vaccine and an effort to confirm the laboratory findings of Hofer. We have examined, bacteriologically, thirty-eight cases of atrophic rhinitis. Crusts were planted in broth and on agar plates. In no instance was the bacillus of Perez isolated. Agglutination tests were made in thirty-four cases. The serum was tested out in dilutions of 1:100. There was not one frank positive agglutination reaction obtained. Twenty-four rabbits were injected intravenously with cultures from the crusts of patients. Fifteen of these rabbits died. At necropsy a streptococcus, staphylococcus, bacillus of Lowenberg, proteus, pyocyaneus and coli bacillus were isolated. The Perez bacillus was not obtained either from the heart's blood or the nasal mucosa. The bacillus of Perez, obtained from Hofer, was injected intravenously into a number of rabbits. It was found to be nonpathogenic for adult rabbits. The bacillus was not found in the nasal passages. Seven suckling rabbits were injected with the same organism and the Perez bacillus was isolated from the heart's blood and nasal mucosa. The organism, which had thus passed through a young rabbit, was found to be pathogenic for adult rabbits. At necropsy it was found that the nasal mucosa was highly injected. It was ascertained, however, that the nasal cultures were positive only in those cases in which the heart's blood was positive.

Our bacteriologic evidence against the Perez bacillus being the cause of ozena is: (1) in thirty-eight cases examined, we were not able to isolate the Perez bacillus; (2) in thirty-four cases, we were not able to obtain an agglutination reaction (3) of twenty-four rabbits injected with mixed cultures from crusts, none showed the Perez bacillus.

Clinically about twenty cases of atrophic rhinitis were treated with vaccines (Perez). Of these cases, twelve (true ozena cases characterized by advanced bilateral atrophy, large greenish crusts and a fetid odor) were observed for a period of from three to eight months. Vaccines, obtained from two strains of the Perez bacillus, were administered at intervals of seven days in doses from 50,000,000 to 500,000,000. In a few of the cases there was clinical improvement, the odor disappearing, the crusts becoming smaller and more easily expelled and atrophic pharyngitis showing improvement. Other cases did not show any objective or subjective evidence of improvement, and in no case could it

be considered that a cure was effected or that there was a permanent disappearance of crust formation.

DR. HENRY LEWIS WAGNER, San Francisco: I would like to ask whether the infarcts had been found in other parts of the body, and where, if other animals had been utilized outside of rabbits? The first man who made a bacteriologic examination of ozena, did so in a laboratory under my supervision in the University of Witzbach, and he then discovered the polymorphous condition of the germ; but in those days —it is now practically twenty-seven years ago—the condition now recognized was not understood, and I am very much interested and have followed it, although I personally have remained rather skeptical. There were a woman and two children, boys I think, in our clinic, but I recall that one boy only showed the characteristic sign of malodor; the mother as well as the other boy showed no sign whatever of the so-called ozena odor, and I think certainly there is no question that the mother as well as one boy should not be included. I have seen these children, and certainly there is no question that all three of them have been benefited.

DR. H. W. LOEB, St. Louis: It seems to me that while work is being done at present, we are still up against the same proposition, whether or not the organism discovered is saprophytic or pathogenic. I should like to ask Dr. Horn if he discovered crusts in the rabbit's nose, and also if he has been able to isolate the Perez bacillus from the nasal discharge. Looking over the various developments in the treatment of ozena in the past twenty years, it seems to me that after all we have achieved more by relieving the nose of the discharge and of the consequent saprophytic changes than by any other plan of treatment. I feel, however, that while we must remain somewhat skeptical, we should be thankful that Dr. Horn was able to make a positive reaction in the mucous membrane of the rabbits.

DR. HENRY HORN, San Francisco: I think that the discussion has brought out the point which I made, that the value of the treatment will be determined by our personal experience. Any one who has read the last article of Hofer in the *Archives of Laryngology* would say that it was exceedingly optimistic. This is the general impression concerning his work, and his enthusiasm during our stay in his laboratory was pronounced. Dr. Willcutt was in Vienna during preliminary stages of this work and he knows that Hofer had just as many obstacles to overcome as we have. In reply to Dr. Loeb's question, I can say that in all the rabbits injected with the original Hofer cultures we recovered the Perez bacillus in the nose. We also recovered it in the heart's blood by the Rosenau method. Regarding the pus in the nose, I have seen a large collection of pus pockets, but no crusts have been seen. I have never noticed odor in the nose of a rabbit, and I do not think that Hofer claims this; but he does claim crusting and atrophy. The point that Dr. Loeb made, that the removal of the saprophytes is a long step toward a cure, is undoubtedly true, and is exactly the point I made. As far as I can see, in the twelve cases I have handled, I have seen as good results with stock nasal vaccine as from the Perez vaccine. As regards the infarcts, I have seen none. Hofer claims there are no changes at necropsy other than the local change in the nose.

Leaders in Rural Sanitation.—It is conceded that among rural people leadership is notably lacking; there is no organization which can be relied on and no idea of social responsibility. Who then can lead in a movement for betterment? The county health officer and the doctor. It is within the authority of the health official to demand certain requirements in the interest of public health and for the protection of the individual. Health work touches intimately the family life in every phase; and it is so personal in many aspects that one with authority like the health officer, or with influence such as the physician has, can teach acceptably and by practical application just what the farmer, his wife and children need to know.—Oscar Dowling, *The American Journal of Public Health*, May, 1915.

A NEW METHOD FOR THE PROPHYLACTIC APPLICATION OF TETANUS ANTITOXIN *

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It has become a fact well established by both clinical and experimental observations that, in the large majority of cases, administration of tetanus antitoxin at the time of, or shortly after, infection by tetanus spores will prevent the development of tetanus. The almost uniformly successful results obtained for a number of years in cases of Fourth of July injuries in the United States have proved conclusively the value of the prophylactic use of tetanus antitoxin.

The present European war has, however, emphasized another phase of the tetanus problem which demands consideration. The routine administration of antitetanic serum to all wounded soldiers is now a fairly general practice both in Germany and in France. In spite of this, owing to the conditions governing the care of the wounded in war, cases of tetanus continue to occur (1) in those soldiers in whom the prophylactic injection has been accidentally omitted, and (2) in those in whom the injection of antitoxin has been delayed until one, two or even more days have elapsed after injury. The occurrence of isolated cases of tetanus in these two groups has tended, in the minds of many European physicians, to cause doubt as to the efficacy of prophylaxis against this disease.

To overcome the delay in administration, it was evident early that some more simple method of application of antitoxin was desirable. The subcutaneous injection of liquid antitoxin, immediately following an injury, manifestly is not a procedure that can always be carried out.

Methods previously proposed to meet this objection, the powdered antitoxin of Calmette, the local applications of liquid antitoxin advocated by Suter, and the rubbing into the wound of antitoxin salve as recommended by Bockenheimer, for reasons which will be discussed in a later article, did not appear to be satisfactory.

Accordingly, after experiments with various methods of local application, the following was found to fulfil best the requirements: Liquid antitoxin was poured on pads of sterile absorbent cotton in such amounts as to render the cotton uniformly moist but not wet enough to drip. These pads were then dried for twenty-four hours in a moderate heat (from 40 to 45 C., 104 to 113 F.). A previously sterilized evaporating dish or earthenware mortar, covered with a double layer of filter paper, was found satisfactory for this purpose. Drying in vacuum did not appear to give any advantage. The dried antitoxin cotton became a stiffened mass, resembling dried paper pulp. This was weighed and then divided into pieces which by weight would represent definite quantities of antitoxin; for example, if the entire mass contained twenty units of dried antitoxin, one twentieth by weight would represent about one unit.

The experimental proof of the efficacy of this method will be described more in detail in a later communication. It is sufficient here to note that when the prepared cotton was bound on freshly made

* From the pathologic-anatomic institute, University of Freiburg in Breisgau (director, Prof. Dr. L. Aschoff).

wounds of mice, rats or guinea-pigs, protection was given against the later injection of many times the minimum fatal dose of tetanus toxin or against the simultaneous inoculation of a garden earth, which had been proved by numerous tests to produce tetanus in 100 per cent. of cases for unprotected mice, rats or guinea-pigs.

If the dry antitoxin pad was bound on a wound in which no fresh blood or serum was present, the absorption of antitoxin was greatly reduced and the protection therefore incomplete. If immediately previous to the application of the pad, it was moistened in sterile saline, distilled water, sterile bouillon or any clean fluid, absorption was rapid and protection entirely adequate.

Pieces of this dried antitoxin cotton were used which were over six weeks old and were found to be perfectly efficient in the usual dosage. Amounts representing the dried product of from one to two and a half units (German standard) were employed, and rats weighing up to 200 grams were given full protection.

In a conference over this method, Hoechst Farbwerke stated that their antitoxin (which was kindly supplied by them for the purposes of these experiments) was combined with a certain percentage of glycerin, which might interfere with both its drying and preservation. They indicated further that a special preparation could be made to meet a demand for such a product.

In conclusion, it must be understood that this method is not offered as a substitute for the subcutaneous injection of fluid antitoxin, which, when it can be properly and early enough administered, is at the present time the best and surest means of producing temporary protection against tetanus. There are occasions, however, especially in times of war, but also in times of peace, such as absence of the proper antitoxin supply, or syringes, too great distance from the doctor, etc., when it would be an advantage to have dry tetanus antitoxin dressings which might be carried in the first-aid dressing kit, which could be applied by a layman as easily as by a physician, and which, in the presence of a dirt-infected wound, only need to be moistened and bound on with the first dressing. In this manner, what might prove to be a dangerous loss of time in obtaining serum could be avoided and the absorption of tetanus antitoxin secured before the elaboration and absorption of tetanus toxin.

A further point in favor of the method is the ease of preservation. As yet no tests have been made with the prepared cotton which has been kept longer than six weeks, but there is no reason to believe that the dried product will not retain its efficacy for much longer periods of time. The difficulties confronting the practicing physician or even druggists in keeping on hand fresh supplies of various antitoxic serums are well known.

Simplicity of preparation and preservation, ease of application, and adaptability to the sudden demands which surround the most complicated injuries when immediate application of serum is indicated, are points which render this method worthy of a thorough trial.

Early Diagnosis.—In the entire realm of preventive medicine, there is no factor more potent than early diagnosis, first, because disease is far more amenable to treatment in the early stages, and second, because early diagnosis affords greater advantages in preventing the spread of infection to others.—*Illinois State Board of Health.*

REPORT OF A CASE OF CESAREAN SECTION AFTER DEATH OF THE MOTHER

ALONZO E. MACK, M.D., OMAHA

Mrs. D., aged 36, quadripara, with negative family and personal history, had always been in the best of health. Three children, aged 10, 7, and 3, had had normal deliveries, and the patient made an uneventful recovery in each confinement. During the third pregnancy the patient developed varicose veins, especially in the lower left extremity, which caused her so much pain that it was necessary for her to wear an elastic stocking or bandage extending from the foot to the thigh. During her fourth pregnancy her condition was normal, and she had no trouble of any character with the exception of the varicosis, and again it was necessary for her to wear the elastic stocking or rubber bandage.

I saw the patient from time to time and examined the urine several times with a negative result. The expected time of confinement was Oct. 11, 1914. About 7 o'clock on the morning of October 4, the patient's husband telephoned me that his wife had fainted and to call immediately. About fifteen minutes later when I arrived at the house I found that the patient had died. Believing that not more than three to five minutes had passed since she died, I advised the immediate opening of the abdomen and uterus and the removing of the child. Her husband quickly consented, and without wasting any time trying to find the fetal heart beat or other signs of fetal life, and knowing positively that the patient was dead and without wasting any time with antiseptic preparations or for control of hemorrhage, with a small lance I opened the abdomen and uterus, and quickly removing the child, clamped the cord and divided it. Much to my dismay the child showed no sign of life, and had passed through the livid stage and was very pallid. With my stethoscope I listened for heart sounds and found none. To all appearances the child was dead.

In hopes that there might be some life in spite of the fact of apparent hopelessness, I began artificial respiration, at the same time dipping the child in a pan of hot water and then cold water and also using the B. S. Schultze method for reviving asphyxiated babes. I continued the artificial respiration and the dipping in the hot and cold baths for forty minutes, and at no time during the forty minutes was there the slightest indication of life, not a single gasp, and the several examinations for heart sounds failed to reveal the least trace of a heart beat. Then it occurred to me to inject hypodermically epinephrin solution, 1:1,000. After I had filled my hypodermic I was puzzled as to where to inject it to do any good. Before this I had tied the cord, leaving a stump of about three-fourths inch. I injected the epinephrin into the cord, carrying the point of the needle well through the abdominal wall. In about two minutes I noticed the cord begin to pulsate. I also noticed a pulsation of the heart through the chest wall. I could palpate the heart beat. With my stethoscope I could hear it very plainly. I continued the artificial respiration, and hot and cold applications, and at the end of fifty minutes from the time the child was delivered it was breathing well and crying lustily.

The babe has not had a sick day, and is a robust healthy child in every respect. May 4, when it was 7 months old, it weighed 19 pounds.

The cause of the patient's death was pulmonary embolism. The offending body was undoubtedly detached, and its starting point was the thrombus from the femoral, the uterine or the ovarian veins. One of the chief trunks of the pulmonary artery was suddenly obstructed, causing violent dyspnea, cyanosis and almost immediate death. In the more fortunate cases of pulmonary embolism, only a small branch is obstructed, when dyspnea and cyanosis are more moderate, and recovery is possible.

My object in presenting this paper is to urge all physicians to do their whole duty if such an opportunity presents.

Special Article

THIRTEENTH ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

This week for the thirteenth consecutive year, THE JOURNAL presents statistics of deaths and injuries resulting from the celebration of the Fourth of July, with special reference to tetanus, or lockjaw, resulting from these injuries. With the rapid decline in the number of casualities in the last few years, instead of relaxing its vigilance, THE JOURNAL has made extra effort to secure complete and accurate data. Whereas, in former years, long lists of casualties were received from the various hospitals, during the last few years, and this year particularly, the blanks were returned with very short lists or with the statement that no cases whatever were treated. Health officers, also, who formerly sent in long lists of killed and injured, likewise had no names to report. On many of the blanks was written the significant statement: "We had a safe and sane Fourth." The data are presented in the same manner as heretofore, and in every table the comparison shows the remarkable decrease during the last few years in the number of deaths and injuries from the use of fireworks.

TABLE 1.—TETANUS CASES BY STATES
Comparison with Previous Years

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	..	..	1	..	..	..	..	..	..	..	..	..	..
Arizona	..	..	..	..	1	..	..	..	..	..	..	..	..
California	2	4	4	3	1	..	2	1	2	1	..	..	..
Colorado	4	..	1	..	..	..	..	..	..	..	..	..	..
Connecticut	3	..	3	..	..	1	..	..	..	..	..	..	..
Delaware	..	..	1	1	1	..	2	..	..	..	..	..	..
Dist. of Columbia	1	..	..	..	..	..	..	..	..	..	..	..	..
Florida	..	..	..	..	..	..	1	..	..	..	..	..	..
Georgia	..	..	..	..	1	..	..	..	..	..	..	..	..
Idaho	1	..	..	..	..	..	1	..	..	..	..	..	..
Illinois	49	15	20	16	12	12	20	10	3	..	..	..	..
Indiana	11	6	3	8	2	..	9	6	..	1	1	..	..
Iowa	14	2	3	4	1	..	1	1	1	..	..	..	..
Kansas	11	1	..	..	2	1	6	..	..	1	..	..	..
Kentucky	4	2	..	1	..	1	1	..	..	..	..	1	..
Louisiana	..	..	..	..	..	..	..	..	..	..	..	..	..
Maine	2	..	1	1	..	..	1	1	..	..	..	..	1
Maryland	1	..	1	1	..	..	2	1	..	..	..	..	..
Massachusetts	16	5	7	3	2	5	8	..	1	1	..	..	..
Michigan	29	7	9	4	4	2	11	11	2	1	..	..	..
Minnesota	15	2	2	2	2	..	..	..	..	..	..	1	..
Missouri	29	1	3	3	1	5	8	2	..	..	..	..	..
Montana	2	1	1	..	1	..	3	2	..	..	..	..	..
Nebraska	4	3	3	1	..	1	3	1	..	..	..	..	..
New Hampshire	2	..	..	1	..	..	1	..	..	..	..	..	..
New Jersey	8	9	3	10	8	10	19	9	2	..	..	1	..
New York	36	9	6	8	4	9	11	7	1	..	2	..	..
North Dakota	..	..	..	..	..	..	..	..	..	..	..	..	..
Ohio	67	9	5	7	6	7	12	3	3	..	..	..	..
Oklahoma	1	..	1	1	..	1	..	1	..	1	..	..	..
Oregon	2	..	..	1	1	1	..	..	..	..	..	..	..
Pennsylvania	82	17	12	5	7	7	10	11	1	..	..	..	..
Rhode Island	3	..	..	1	..	..	..	..	..	..	..	..	..
South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..
South Dakota	..	..	..	..	..	1	1	..	..	..	..	..	..
Tennessee	..	..	..	..	..	..	..	..	..	..	..	..	..
Texas	..	..	..	..	2	..	..	..	..	..	..	..	..
Utah	1	1	1	..	..	..	1	..	..	..	..	..	..
Vermont	3	2	..	2	2	..	..	..	..	..	..	..	..
Washington	2	1	..	..	2	4	4	1	..	..	..	..	..
West Virginia	2	..	..	2	..	1	4	..	..	2	..	..	..
Wisconsin	10	4	13	2	3	5	9	3	2	..	..	..	..
Wyoming	..	..	..	1	..	..	..	..	..	..	..	..	..
Total	417	105	104	89	73	76	150	72	18	7	4	3	1
States having cases	30	21	23	25	23	20	25	19	10	6	3	3	1

ONLY ONE LOCKJAW VICTIM THIS YEAR

There was only one fatality from lockjaw reported this year, a 12-year-old boy named Coro who lived at Waterville, Maine, and who, while celebrating, shot himself — site of wound not given — with a blank cartridge pistol. Tetanus developed and he died nine days later. Apparently antitoxin was not used.

The distribution by states of lockjaw cases resulting from Fourth of July injuries for each of the last thirteen years is given in Table 1. The rapidly decreasing totals for some of the states is strikingly shown, particularly for Illinois, Massachusetts, Michigan, Missouri, New York, Ohio and Pennsylvania. Let us hope that the one case reported this year will be the end of tetanus deaths from this needless cause.

TABLE 2.—RATIO OF TETANUS CASES TO BLANK CARTRIDGE INJURIES

Year	Tetanus Cases	Blank Cartridge Injuries	Ratio
1903	417	1,672	1: 4.01
1904	105	905	1: 8.62
1905	104	800	1: 7.78
1906	89	979	1:11.00
1907	73	606	1: 8.30
1908	76	942	1:12.39
1909	150	1,225	1: 8.17
1910	72	450	1: 6.25
1911	18	185	1:10.28
1912	7	75	1:10.71
1913	4	97	1:24.25
1914	3	122	1:40.67
1915	1	294	1:29.40
Totals	1,119	8,361	1: 7.47

BLANK CARTRIDGE WOUNDS AND TETANUS

The proportion of blank cartridge injuries to the cases of lockjaw reported in Fourth of July injuries during the thirteen years is given in Table 2. The two years in which the largest numbers of lockjaw cases were reported were 1903 and 1909, when also the two largest numbers of blank cartridge wounds were reported. The one case this year was due to this cause, although there were 294 blank cartridge wounds. The decreasing proportions of tetanus cases to such injuries in the last three or four years was doubtless due to the more general and prompt use of antitoxin in such injuries. The proportion for all the thirteen years was one lockjaw case to every 7.47 blank cartridge injuries.

TABLE 3.—CAUSES OF TETANUS CASES

Year	Blank Cartridge	Giant Cracker	Cannon	Fire-arms	Powder, etc.	Total
1903	362	17	5	3	29	417
1904	74	18	5	1	7	105
1905	65	17	4	5	13	104
1906	54	17	1	7	10	89
1907	52	8	6	4	3	73
1908	58	5	4	3	6	76
1909	130	9	1	4	6	150
1910	64	2	..	5	1	72
1911	15	1	1	..	1	18
1912	7	..	..	..	..	7
1913	4	..	..	..	..	4
1914	2	..	..	1	..	3
1915	1	..	..	..	..	1
Totals	889	94	27	33	76	1,119

CAUSES OF LOCKJAW CASES

Altogether 1,119 cases of lockjaw from Fourth of July injuries were reported for the thirteen years. Of these, 889 (79.4 per cent.), were caused by wounds from blank cartridges; 94 (8.4 per cent.) from giant crackers; 76 (6.9 per cent.) from powder and explosives; 33 (2.9 per cent.) from firearms, and 27 (2.4 per cent.) from toy cannons. In other words,

over three times as many lockjaw cases were due to blank cartridge injuries as to all other injuries put together.

TETANUS CASES NOT DUE TO FIREWORKS

Tetanus cases reported during the Fourth of July season but which were due to other causes, such as crushing injuries or penetrating wounds from splinters, nails, etc., are shown in Table 4. These are given to show the general prevalence of tetanus germs during the season. The number of such cases is likewise decreasing each year, probably due to more care being taken in the treatment of penetrating wounds as well as to the prophylactic use of antitoxin.

TABLE 4.—CASES OF TETANUS FROM OTHER CAUSES

	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	..	..	1	1	..	..	..	..
Arizona	..	..	..	..	..	1	..	..
Arkansas	2	..	..	..	..	..	..	..
California	4	4	1	2	7	10	..	1
Colorado	3	..	..	1	..	..	..	..
Connecticut	2	2	..	..	..	..	..	..
Delaware	2	1	..	..	..	..	..	..
District of Columbia	..	..	..	..	..	..	..	..
Florida	2	..	..	..	..	..	..	..
Georgia	..	1	..	..	..	..	..	1
Idaho	..	..	..	..	..	..	..	..
Illinois	17	18	7	6	10	7	..	..
Indiana	6	4	1	2	1	3	1	1
Iowa	2	7	3	1	..	2	1	..
Kansas	4	..	1	..	..	..	..	..
Kentucky	5	5	..	1	2	..	3	1
Louisiana	1	..	..	1	3	3	..	..
Maine	..	..	..	..	..	..	..	..
Maryland	3	..	2	1	1	..	..	..
Massachusetts	3	5	..	..	..	..	..	..
Michigan	4	5	1	..	..	..	1	..
Minnesota	4	2	..	..	..	..	..	..
Mississippi	..	..	..	..	..	..	..	..
Missouri	12	5	1	2	3	..	..	3
Montana	..	..	..	..	..	..	..	..
Nebraska	..	3	1	1	1	..	..	..
Nevada	..	..	..	..	..	..	..	..
New Hampshire	..	..	..	..	..	..	..	..
New Jersey	7	8	8	1	..	..	3	..
New Mexico	..	1	..	..	..	..	..	..
New York	17	12	4	2	4	..	2	..
North Carolina	1	..	..	..	..	1	..	..
North Dakota	1	..	..	..	..	..	..	..
Ohio	23	13	2	..	2	1	3	..
Oklahoma	..	..	..	..	..	..	..	..
Oregon	..	1	3	..	2	..	..	..
Pennsylvania	21	21	8	6	4	1	2	2
Rhode Island	..	1	..	..	..	..	..	..
South Carolina	..	..	..	..	..	..	..	..
South Dakota	2	2	..	..	..	..	..	..
Tennessee	3	..	..	..	1	1	..	..
Texas	4	1	1	..	..	..	..	..
Utah	..	..	..	..	..	..	..	..
Vermont	..	..	1	..	2	1	..	..
Virginia	4	1	..	1	2	1	..	..
Washington	2	..	..	..	1	..	..	..
West Virginia	..	1	..	..	..	..	..	..
Wisconsin	3	4	1	..	..	1	..	1
Wyoming	..	..	..	..	..	..	..	..
Totals	166	128	47	29	44	32	16	10
States reporting cases	29	25	18	15	15	12	8	7

OTHER DEATHS AND INJURIES FROM FIREWORKS

Besides the one death due to tetanus, twenty-nine persons were killed by various forms of fireworks, making a total of thirty deaths, or ten less than last year, two less than in 1913, eleven less than in 1912, twenty-seven less than in 1911 and 101 less than in 1910. The number this year is the smallest since the collection of these statistics was begun. The causes of deaths, other than from tetanus, are shown in Table 5, in comparison with the numbers due to similar causes in previous years. This year five persons were killed outright by firearms, five by explosions of powder, bombs or torpedoes, six by cannon, and two by other forms of fireworks. The most serious fact presented this year is that eleven persons, mostly little girls or small children, were burned to death by fire from fireworks, most cases being caused by the supposedly "harmless" varieties.

As heretofore, all accidents not due directly to the discharge or handling of fireworks, or other means of noise production and display, on or about the Fourth of July, have been omitted. Of the 719 deaths from Fourth of July injuries, other than from tetanus, in the thirteen years, 217, the largest number, were burned to death; 199, the next largest number, were killed by firearms; 116 by explosives; 58 and 48, respectively, by giant crackers and toy cannons, and 81 persons by various forms of fireworks.

DISTRIBUTION OF INJURIES

In Table 6 a summary of all injuries, including tetanus, and of all causes, is given arranged by states. Beneath the totals at the bottom are given, for comparison, the totals for the twelve previous years and the grand totals for the thirteen years. Table 7 permits the comparison by states of the totals of deaths and injuries for twelve years. The number of casualties this year was 1,165, a decrease of 341 below last year, but an increase of two over 1913 and an increase of 177 over 1912. New York had 332, the largest number, this year — in fact, that state shows an annual increase in the number of casualties since 1912. Pennsylvania, heretofore always holding the darkest record, falls to second place this year with 209 injuries, or 188 cases less than in 1914. Marked increases over last year are reported for California, Massachusetts, Minnesota, New York and West Virginia. All other states reported decreases, or only slight increases.

TABLE 5.—CAUSES OF DEATHS NOT DUE TO TETANUS

Year	Gunshot	Fire from Fireworks	Powder, Torpedoes, etc.	Giant Crackers	Cannon	Other Causes	Total
1903	37	23	6	5	7	17	95
1906	38	18	18	3	3	3	83
1907	30	31	13	13	3	22	107
1908	30	22	19	22	7	7	108
1909	17	37	16	7	7	6	90
1910	19	26	11	2	3	3	64
1911	11	12	9	2	5	8	47
1912	9	8	7	2	2	7	35
1913	8	13	6	..	1	1	29
1914	5	16	6	1	4	5	37
1915	5	11	5	..	6	2	29
Totals	199	217	116	58	48	81	719

NATURE OF NONFATAL INJURIES

There were 1,135 nonfatal injuries this year, or 331 less than last year, four more than in 1913 and 188 more than in 1912. One person was totally blinded this year, eleven lost one eye each, five lost legs, arms or hands, and thirty-eight lost one or more fingers. In spite of the continued increase in the total number of nonfatal injuries since 1912, the totals of these more severe injuries have markedly decreased, the totals this year being the smallest reported during the thirteen years. This year 227 injuries were due to the giant firecracker, which drops to the second place in causing nonfatal injuries, but continues to hold the first place as a cause of lacerated wounds. It was responsible for most of the losses of eyes, hands and fingers, but this year caused no deaths. Firearms caused 100 injuries, including five deaths. As usual, many of these injuries were due to stray bullets from

the reckless use of firearms by other persons. The use of cannons, including many of the improvised variety, resulted in ninety-three injuries this year, including six killed. In the thirteen years, a total of 43,951 persons were killed or injured in the celebration of the Fourth of July.

TOTALS IN CHIEF CITIES

Table 8 shows the number reported killed and injured in the eighty-four largest cities each year, and the totals for the past nine years. The cities are arranged according to their population as given by the United States census in 1910. This table is of particular interest, since the results are shown in cities of nearly equal size. Philadelphia, which has been constantly in the lead since 1909, still holds the darkest record with one killed and 280 injured. New York nearly equals that record with 272 injured. St. Louis holds third place with forty-seven, and Boston and Hartford (Conn.) are tied for fourth place with twenty-seven each. In spite of Chicago's unusually clean record, five of the eight casualties were fatal. Of the 299 accidents reported for Pennsylvania, all but eighteen were in Philadelphia. Likewise, of the 332 casualties reported for New York State, all but sixty occurred in New York City. It is, therefore, up to these cities to remove the blots from the records of those states.

TABLE 6.—SUMMARY BY STATES OF FOURTH OF JULY CASUALTIES

Marginal Number	States	Deaths			Injuries							Total Persons Dead or Injured	Causes of Tetanus Cases		Causes of all Cases Aside from Tetanus Cases				Marginal Number
		From Tetanus	From Other Causes	Total	Loss of Sight	Loss of One Eye	Loss of Legs, Arms or Hands	Loss of Fingers, One or More	Other Injuries	Total Non-Fatal Injuries			Blank Cartridge	All Other Causes	Blank Cartridge	Firecracker	Cannon	Firearms	Powder and Fireworks	
1	Alabama								1	1		1				1				1
2	Arizona								2	2		2			1				1	2
3	Arkansas																			3
4	California							3	37	40		40			1	9	4	1	25	4
5	Colorado								3	3		3							3	5
6	Connecticut					2			47	49		49			22	4	6	9	8	6
7	Delaware								1	1		1				1				7
8	District of Columbia								1	1		1			1					8
9	Florida																			9
10	Georgia																			10
11	Idaho								2	2		2							2	11
12	Illinois		7	7		1			38	47		54				15	8	5	26	12
13	Indiana				1	2			22	29		29			1	13	6	3	6	13
14	Iowa	1	1			1	1		18	20		21				3	4	2	12	14
15	Kansas								2	2		2				1			1	15
16	Kentucky								5	5		5				3		2		16
17	Louisiana	1		1								1							1	17
18	Maine	1		1		1			7	8		9	1			2			1	18
19	Maryland							2	21	23		23			2	4	2	3	12	19
20	Massachusetts		4	4					69	69		73			1	19	7	1	45	20
21	Michigan		1	1		1			29	30		31			2	13	3	3	10	21
22	Minnesota		1	1			1	1	13	17		18				6	3		9	22
23	Mississippi																			23
24	Missouri		1	1				1	46	47		48			19	7	3	3	16	24
25	Montana								2	2		2				1			1	25
26	Nebraska								3	3		3				1		1		26
27	Nevada								2	2		2							2	27
28	New Hampshire								4	4		4				4				28
29	New Jersey		1	1				1	34	35		36			11	5	3	3	14	29
30	New Mexico		1	1		1			1	2		2								30
31	New York						1	5	326	332		332			205	17	10	38	62	31
32	North Carolina																			32
33	North Dakota																			33
34	Ohio		3	3				1	9	10		13				3	1	4	5	34
35	Oklahoma		1	1																35
36	Oregon						1		4	5		5				2			3	36
37	Pennsylvania		6	6		1	1	8	263	273		280			25	73	29	17	155	37
38	Rhode Island								5	5		5			1	2			2	38
39	South Carolina																			39
40	South Dakota								4	4		4							4	40
41	Tennessee																			41
42	Texas																			42
43	Utah		1	1					1	1		2						1	1	43
44	Vermont																			44
45	Virginia																			45
46	Washington								6	6		6				1		1	4	46
47	West Virginia								13	13		13			1	5	3	1	3	47
48	Wisconsin					1		2	19	22		22				11	1	2	8	48
49	Wyoming																			49
50	1915 totals	1	29	30	1	11	5	38	1,080	1,135		1,165	1	9	284	227	93	100	450	50
51	1914 totals	3	37	40	3	13	16	67	1,367	1,466		1,506	2	1	122	402	143	231	665	51
52	1913 totals	3	29	32	2	22	10	46	1,051	1,131		1,163	4	0	97	312	62	160	519	52
53	1912 totals	6	35	41	8	21	13	43	862	947		988	7	0	70	562	75	157	317	53
54	1911 totals	10	47	57	8	26	30	83	1,200	1,346		1,403	15	3	170	484	114	184	633	54
55	1910 totals	67	64	131	7	33	26	114	2,612	2,792		2,923	64	8	386	1,050	212	229	974	55
56	1909 totals	125	90	215	16	36	41	176	4,823	5,092		5,307	130	20	1,085	1,614	427	341	1,680	56
57	1908 totals	55	108	163	11	93	57	184	5,115	5,460		5,623	58	18	816	1,793	389	481	2,058	57
58	1907 totals	62	102	164	12	75	57	237	3,968	4,249		4,413	52	21	554	1,489	367	502	1,538	58
59	1906 totals	73	83	156	22	72	56	227	4,931	5,308		5,464	54	35	925	1,990	468	522	1,822	59
60	1905 totals	87	95	182	23	109	30	221	4,562	4,944		5,126	63	39	744	1,775	474	404	1,675	60
61	1904 totals	91	92	183	19	61	61	260	3,637	3,986		4,169	74	25*	831	1,268	508	490	1,057	61
62	1903 totals	406	60	466	10	75	54	174	3,670	3,983		4,449	362	29†	1,309	1,152	397	236	363	62
	Totals for thirteen years	901	871	1,802	144	644	506	1,818	38,977	42,086		43,951	889	199	7,413	13,618	3,579	3,972	14,281	

* Kind of fireworks causing six tetanus cases unknown.

† Kind of fireworks causing twenty-four cases of tetanus unknown.

Of these eighty-four cities, forty-one had clear records this year as compared with twenty-two last year, thirty-one in 1913 and twenty-eight in 1912, when the lowest total of casualties was reported. The cities showing the most marked reductions in the total numbers of injuries are Chicago, Cleveland, Buffalo, Newark, Minneapolis, Jersey City and Kansas City. On the other hand, New York, Boston, Baltimore, Indianapolis, Worcester, Hartford and Wilkes-Barre seem to be losing their control of the situation in the last three or four years, and the numbers of casualties are increasing.

WHERE THE RESPONSIBILITY RESTS

As has been repeatedly stated in these annual reports, for the greater majority of Fourth of July

TABLE 7.—TOTAL DEATHS AND ACCIDENTS BY STATES DURING TWELVE YEARS

	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
Alabama	7	1	2	1	1	1	3	3	....	1	....	1
Arizona	....	4	5	2	5	3	....	2	2	....	2	2
Arkansas	....	2	4	....	5	5	....	....	....	....	....	....
California	138	142	96	121	136	80	63	43	31	23	24	40
Colorado	44	36	23	25	13	18	19	6	21	1	3	3
Connecticut	133	132	169	63	105	86	78	15	30	50	77	49
Delaware	5	14	8	16	12	13	8	3	6	6	8	1
District of Columbia	10	24	5	12	21	....	....	....	2	1	1	1
Florida	2	2	....	....	....	1	4	....	....	....	....	....
Georgia	....	....	4	2	4	....	5	10	28	4	....	....
Idaho	4	....	3	4	4	2	3	1	....	....	1	2
Illinois	423	542	508	468	558	546	285	218	39	47	95	54
Indiana	211	217	250	....	255	164	167	53	43	12	62	29
Iowa	137	228	255	231	174	91	141	54	24	22	27	21
Kansas	88	56	61	64	72	86	50	25	8	5	7	2
Kentucky	72	17	71	18	33	17	26	6	5	2	11	5
Louisiana	2	3	7	8	4	....	4	2	2	4	4	1
Maine	32	29	15	11	16	22	7	4	....	6	6	9
Maryland	22	13	10	23	21	10	8	13	11	15	10	23
Massachusetts	196	467	229	168	430	430	63	27	45	43	87	73
Michigan	157	288	193	163	203	177	143	69	50	21	72	31
Minnesota	102	174	95	95	65	69	64	17	17	6	12	18
Mississippi	....	....	2	2	1	....	....	1	1	....	....	....
Missouri	84	218	325	290	375	332	112	60	37	85	33	48
Montana	17	40	3	6	11	9	10	....	6	....	1	2
Nebraska	63	43	47	58	46	42	30	17	12	17	10	3
Nevada	1	2	....	1	4	....	1	....	....	....	....	2
New Hampshire	23	9	29	13	13	23	10	2	8	8	15	4
New Jersey	285	250	298	462	472	486	167	43	16	21	72	30
New Mexico	4	5	1	6	....	1	3	....	....	3	....	3
New York	540	566	681	752	647	897	327	227	115	144	250	322
North Carolina	....	1	1	....	....	....	1	5	....	....	....	....
North Dakota	8	29	11	8	13	....	13	....	6	....	....	....
Ohio	327	329	400	375	543	323	166	105	55	70	45	13
Oklahoma	3	7	14	194	9	12	11	9	11	1	4	1
Oregon	13	9	11	5	9	21	19	3	5	4	5	5
Pennsylvania	744	721	969	491	987	986	623	442	265	491	487	289
Rhode Island	30	11	21	39	26	42	19	11	2	21	25	5
South Carolina	....	....	1	....	....	4	....	1	....	....	....	....
South Dakota	10	15	5	8	10	9	4	2	....	1	4	....
Tennessee	1	5	6	4	5	4	10	3	12	1	....	....
Texas	2	4	11	7	11	4	2	....	2	2	....	....
Utah	22	25	18	30	12	18	8	2	1	1	1	2
Vermont	14	10	14	18	19	12	4	4	1	....	3	....
Virginia	11	5	8	....	9	....	4	3	1	....	5	....
Washington	75	15	25	23	28	32	37	22	12	13	5	6
West Virginia	16	34	64	27	29	35	20	2	2	3	8	13
Wisconsin	215	230	155	150	187	157	171	52	38	16	23	22
Wyoming	2	8	3	....	1	1	4	4	1	....	....	....
Totals	4169	5176	5466	4413	5623	5307	2923	1693	988	1163	1506	1165

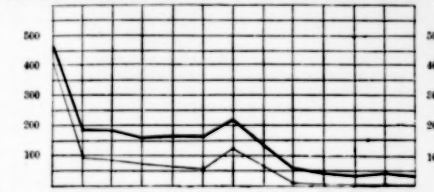
injuries, *the responsibility clearly rests with city governments*, since the employment of death-dealing methods of celebration is subject to their regulation. The city authorities, therefore, who fail to do their duty must be held personally responsible for the maiming of hundreds, the shooting of others and the burning to death of little children by fire from fireworks. Rigidly enforced prohibitive ordinances in forty-three of our largest cities would practically remove this national disgrace. Restrictive ordinances are usually looked on as half way measures, and are not expected to be strictly enforced; therefore, prohibition measures are essential.

PROGRESS IN THIRTEEN YEARS

The results of publishing these statistics for thirteen years are graphically shown in the two accompanying charts. Chart 1 shows the reductions in the numbers killed. The heavy line indicates the numbers killed each year from all causes; the light line shows the numbers of deaths each year from lockjaw.

CHART 1.—TOTAL DEATHS FROM FIREWORKS

The heavy line shows the annual fluctuation in the total number of deaths since 1903. The deaths from lockjaw are indicated by the light line.



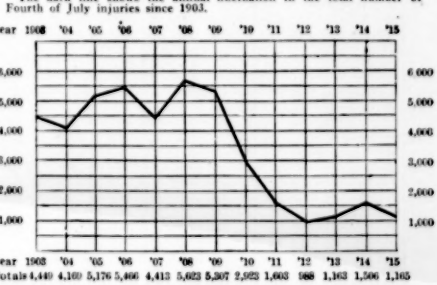
Year	1903	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
Total Deaths	466	183	182	158	164	163	215	131	57	41	32	40	30
Lockjaw Deaths	466	91	87	75	62	55	125	67	10	6	3	3	1

Chart 2 shows the totals of those killed and injured for the thirteen years. Note that in spite of the publication annually of the awful results of the celebration, the totals continued gradually to increase until 1908, and that the remarkable decrease began in 1909.

In 1908 another table (Table 8) was added to THE JOURNAL'S statistics, in which the numbers killed and injured in each of the eighty-four largest cities were shown. It was also pointed out that the responsibility for these casualties clearly rested with city governments. When the 1908 report was published, reprints were circulated far and wide among newspapers and other publications. The result was most remarkable. Since that time not only did the

CHART 2.—TOTAL CASUALTIES FROM FIREWORKS

The dark line shows the annual fluctuation in the total number of Fourth of July injuries since 1903.



Year	1903	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
Totals	4,449	4,169	5,176	5,466	4,413	5,623	5,307	2,923	1,693	988	1,163	1,506	1,165

press of the country generally take up the cause, but also local, state and national organizations and societies became interested. They not only argued against the use of fireworks, but, more important, also provided more rational and patriotic means of celebration. Vigorous action was taken by city councils, and each year the ordinances are growing more prohibitive. All these forces have made most liberal use

of THE JOURNAL'S statistics, even though the source has not always been mentioned. The number of deaths has been reduced from 215 to thirty; the deaths from lockjaw from 125 to one, and the totals of deaths and injuries from 5,460 to 1,135. While these decreases are gratifying, the fact that so many casualties are still reported indicates the need for a continuance of the effort for improvement.

TABLE 8.—NUMBER REPORTED KILLED AND INJURED IN THE LARGER CITIES DURING NINE YEARS

Marginal No.	City	1907		1908		1909		1910		1911		1912		1913		1914		1915		Totals		Marginal No.
		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	
1	New York City	22	422	11	316	7	559	6	179	3	91	1	58	..	65	1	94	..	272	51	2,056	1
2	Chicago	16	151	12	202	..	118	4	62	2	33	2	12	1	12	3	18	5	3	45	631	2
3	Philadelphia	7	248	6	426	9	508	4	465	..	234	2	127	3	340	4	237	1	200	36	2,805	3
4	St. Louis	3	199	4	229	4	163	..	44	..	28	..	68	..	72	1	43	..	47	12	573	4
5	Boston	3	59	6	190	5	167	..	35	..	3	..	16	1	15	..	13	..	27	15	525	5
6	Cleveland	3	63	12	93	..	4	..	1	..	5	..	1	..	4	..	1	..	...	15	172	6
7	Baltimore	..	5	1	10	..	5	..	6	..	10	..	10	..	12	..	6	..	19	2	83	7
8	Pittsburgh	10	66	..	20	5	45	6	26	1	25	1	14	1	46	1	11	..	8	25	266	8
9	Detroit	2	46	..	10	2	46	1	17	..	18	2	20	1	3	..	43	..	6	8	209	9
10	Buffalo	..	18	3	11	..	33	1	13	..	16	..	6	..	16	2	9	..	1	6	123	10
11	San Francisco	..	...	..	11	..	12	..	9	1	8	..	7	..	9	..	4	..	5	1	65	11
12	Milwaukee	2	93	..	79	..	78	3	112	1	19	..	24	..	10	..	8	..	9	6	423	12
13	Cincinnati	2	89	1	112	3	86	3	49	1	4	..	21	..	26	1	6	2	1	13	392	13
14	Newark, N. J.	1	129	2	81	1	150	1	15	..	..	..	..	..	..	..	2	1	1	6	378	14
15	New Orleans	..	8	..	4	..	..	..	3	..	2	..	2	..	3	..	4	..	...	..	26	15
16	Washington, D. C.	..	12	..	21	..	..	..	..	..	..	..	2	..	3	..	1	..	...	..	39	16
17	Los Angeles, Cal.	..	25	..	40	..	26	..	..	..	..	..	5	..	6	..	1	..	7	..	125	17
18	Minneapolis, Minn	..	12	..	10	1	24	..	20	..	..	..	..	..	2	..	1	..	1	1	71	18
19	Jersey City, N. J.	..	21	5	34	1	14	1	44	..	14	..	3	..	..	..	2	..	3	7	145	19
20	Kansas City, Mo.	1	46	..	55	4	67	1	25	..	4	..	1	..	..	..	..	1	..	7	198	20
21	Seattle, Wash.	1	3	..	7	3	10	..	7	..	..	..	2	..	2	..	..	..	1	4	25	21
22	Indianapolis, Ind.	1	81	1	14	1	35	..	24	..	5	..	6	..	1	..	11	..	10	3	157	22
23	Providence, R. I.	..	20	1	21	..	13	..	10	1	9	..	..	2	17	..	7	..	1	4	98	23
24	Louisville, Ky.	..	13	..	10	1	10	1	13	..	3	..	2	..	2	..	8	..	3	2	64	24
25	Rochester, N. Y.	..	12	..	10	..	5	..	6	..	4	..	2	..	4	..	8	..	...	..	51	25
26	St. Paul, Minn.	..	20	..	13	..	18	..	12	..	10	..	7	..	2	..	4	..	4	..	90	26
27	Denver, Colo.	..	8	..	13	..	12	1	6	..	2	..	7	..	1	..	1	..	..	1	50	27
28	Portland, Ore.	..	2	..	3	..	16	..	13	..	1	..	2	..	..	..	..	..	...	..	37	28
29	Columbus, Ohio	5	26	..	5	1	19	..	..	..	1	..	2	..	7	..	..	..	1	6	80	29
30	Toledo, Ohio	1	5	..	8	2	3	1	2	..	2	1	1	..	7	..	..	..	...	5	29	30
31	Atlanta, Ga.	1	4	..	3	..	..	..	..	..	10	..	28	..	4	..	..	..	...	1	54	31
32	Oakland, Cal.	..	9	..	..	..	8	..	9	..	1	..	2	..	..	..	..	..	2	..	31	32
33	Worcester, Mass.	1	6	2	10	1	27	..	6	..	1	..	10	..	14	..	3	..	13	4	115	33
34	Syracuse, N. Y.	..	20	..	14	..	13	..	6	..	1	..	4	..	15	..	6	..	...	..	79	34
35	New Haven, Conn.	..	2	..	..	..	15	..	..	..	1	..	6	..	10	..	11	..	...	..	45	35
36	Birmingham, Ala.	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	...	..	3	36
37	Memphis, Tenn.	..	1	..	2	..	4	..	6	..	..	..	2	..	..	..	..	..	...	..	15	37
38	Scranton, Pa.	..	5	1	17	1	29	..	6	..	10	..	..	..	9	1	15	..	4	1	96	38
39	Richmond, Va.	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	4	..	1	1	5	39
40	Paterson, N. J.	1	29	2	31	1	45	1	14	..	5	..	2	..	4	..	..	..	...	..	130	40
41	Omaha, Neb.	..	25	..	10	1	17	..	17	..	7	1	2	..	16	..	6	..	1	2	101	41
42	Fall River, Mass.	..	..	..	12	..	19	..	1	..	..	..	1	..	..	..	1	..	...	..	34	42
43	Dayton, Ohio	..	11	..	14	..	4	..	2	..	4	..	1	..	..	..	1	..	...	..	37	43
44	Grand Rapids, Mich.	..	20	1	30	..	3	..	17	1	6	..	9	..	13	..	2	..	8	2	108	44
45	Nashville, Tenn.	..	2	..	..	..	..	..	8	..	2	..	10	..	2	..	..	..	...	..	24	45
46	Lowell, Mass.	..	22	..	..	..	18	..	..	1	3	1	..	..	..	..	..	..	4	..	44	46
47	Cambridge, Mass.	..	..	..	17	..	..	..	..	..	4	..	..	..	..	..	4	..	2	..	27	47
48	Spokane, Wash.	..	..	..	..	..	..	..	..	..	7	..	4	..	8	..	2	..	4	..	25	48
49	Bridgeport, Conn.	..	1	..	27	..	21	..	4	..	4	..	1	..	3	..	23	..	2	..	86	49
50	Albany, N. Y.	1	24	..	37	..	21	1	11	1	5	..	4	..	1	..	1	..	1	2	110	50
51	Hartford, Conn.	..	18	..	18	..	11	..	14	..	1	..	9	..	27	..	3	..	27	..	128	51
52	Trenton, N. J.	..	28	1	17	1	56	..	..	..	1	..	1	..	1	..	1	..	...	2	116	52
53	New Bedford, Mass.	..	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	..	...	..	4	53
54	Reading, Pa.	..	17	..	13	..	17	1	3	..	4	..	3	..	21	..	5	..	...	1	83	54
55	San Antonio, Tex.	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	1	55
56	Camden, N. J.	..	16	..	29	4	14	..	6	..	..	1	..	..	1	..	1	..	2	..	68	56
57	Salt Lake City	..	15	..	6	2	14	1	4	..	1	..	1	..	..	..	..	..	...	3	41	57
58	Lynn, Mass.	..	3	..	11	3	16	..	4	..	..	..	2	..	..	..	..	..	...	..	36	58
59	Springfield, Mass.	..	21	1	30	1	9	1	2	..	4	..	..	1	1	..	..	..	1	..	70	59
60	Wilmington, Del.	1	14	..	13	3	9	..	6	..	2	..	5	..	6	..	6	..	1	4	62	60
61	Des Moines, Iowa	1	31	..	41	..	13	..	23	..	12	..	..	..	6	..	6	..	4	1	136	61
62	Lawrence, Mass.	..	11	1	..	5	22	..	..	..	..	..	..	..	..	..	..	..	...	6	33	62
63	Tacoma, Wash.	2	4	1	2	..	3	..	..	..	..	..	1	..	1	..	..	..	...	4	11	63
64	Kansas City, Kan.	1	10	..	17	..	33	..	14	1	5	..	..	..	..	..	..	..	...	2	84	64
65	Yonkers, N. Y.	..	22	..	5	..	8	..	..	..	4	..	..	..	..	..	..	..	...	..	39	65
66	Houston, Texas	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	...	..	2	66
67	Duluth, Minn.	..	12	..	9	2	10	..	..	..	1	..	..	..	..	1	1	..	...	3	37	67
68	St. Joseph, Mo.	1	23	1	41	1	24	..	11	..	1	..	..	..	..	..	2	..	...	..	104	68
69	Somerville, Mass.	..	..	..	..	..	1	..	2	..	..	..	1	..	..	..	1	..	...	..	5	69
70	Troy, N. Y.	..	..	2	18	..	16	1	8	..	2	..	1	..	1	..	6	..	3	3	57	70
71	Utica, N. Y.	..	18	..	10	..	5	1	4	..	..	..	..	..	2	..	2	..	...	..	36	71
72	Waterbury, Conn.	2	6	..	14	..	5	..	15	1	..	..	..	..	1	..	..	..	...	3	43	72
73	Schenectady, N. Y.	..	4	..	20	..	8	1	13	..	7	..	..	..	1	..	2	..	...	1	55	73
74	Hoboken, N. J.	..	1	1	24	..	7	..	4	..	..	..	1	..	..	..	..	..	1	1	38	74
75	Elizabeth, N. J.	..	43	..	72	..	37	..	15	..	1	..	..	..	..	..	..	..	...	..	168	75
76	Manchester, N. H.	..	2	..	1	1	5	..	..	..	..	..	1	..	1	..	2	..	...	1	12	76
77	Evansville, Ind.	..	5	..	..	..	12	..	6	..	1	..	..	..	..	..	9	..	2	..	47	77
78	Norfolk, Va.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	...	..	1	78
79	Wilkes-Barre, Pa.	1	....	3	38	1	15	2	8	..	2	..	5	..	..	..	1	..	11	7	80	79
80	Peoria, Ill.	..	6	..	27	1	22	1	17	..	..	..	2	..	1	..	3	..	...	3	79	80
81	Erie, Pa.	..	..	1	..	..	..	..	..	..	5	..	1	1	3	..	..	..	1	..	10	81
82	Savannah, Ga.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	82
83	Harrisburg, Pa.	..	22	1	71	..	22	..	3	..	1	..	..	..	..	..	1	..	7	1	128	83
84	Portland, Me.	1	2	..	..	..	2	..	..	1	2	..	..	..	1	..	1	..	1	2	9	84
	Totals	94	2,456	83	2,880	80	2,936	43	1,457	16	776	12	522	10	854	18	681	10	866	366	13,349	
	Totals elsewhere	70	1,791	80	2,600	135	2,155	68	1,335	41	772	29	422	22	309	22	825	20	359	507	10,569	
	Grand totals	164	4,249	163	5,480	215	5,091	121	2,792	57	1,548	41	945	32	1,163	40	1,506	30	1,165	873	23,917	

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MASTICATION AND FOOD UTILIZATION

Again and again in everyday life we find that some dictum which either commends itself to common sense or lends itself freely to argumentative proof is being made the basis of a widespread propaganda. What was more reasonable than to assume that water ingested with meals would dilute the gastric juice and thus diminish its proteolytic efficiency? And what was more logical than to urge the abolition of such an assumedly harmful custom of water drinking? Yet investigation has showed that some of the postulates in this contention are wrong, and that unsuspected factors further vitiate the conclusions.[1] Indeed, under certain conditions water may even promote the gastric secretion, and thus upset these revered traditions.

The proper mastication of food has certain obvious justifications. It promotes a more extensive insalivation, which is not without advantage to certain types of foodstuffs, and it permits a speedier admixture of the alimentary digestive secretions with the individual comminuted food particles. Enthusiasts have not been content with the insistence on these indisputable advantages, but have attempted to infuse far-reaching effects into the habit of very complete mastication. We may be ready to admit that insufficient mastication is the cause of direct or indirect evils which may be greatly exaggerated in certain pathologic conditions. When, however, we are urged to chew our food with unremitting vigor because it "secures proper insalivation of food, increases the quantity of alkaline saliva passing into the stomach, stimulates the heart and circulation, influences the nutrition of the jaws and their appendages by stimulating blood and lymph circulation, and, finally, tends to diminish the amount of food consumed because it is more economically disposed of in the system," one may well pause to make a few related inquiries. Where is the borderline between "truth and poetry" in these matters?

The two extremes of practice are doubtless represented by undermastication, as involved in the hasty bolting of food, and overmastication, to which the epithet "fletcherizing" is sometimes applied. Foster and Hawk[2] have completed studies of the utilization of typical protein as influenced by different degrees of mastication. The principal protein constituent of the diet was cooked beef in the form of 15-millimeter cubes. It happened that protein utilization was most complete as the result of good mastication, and least complete when bolting was practiced. The output of fecal nitrogen was highest during the food bolting, and macroscopic meat residues appeared in every stool under such conditions. Yet the discrepancies in the protein utilization during these extremes of mastication averaged only 1.6 per cent.

Such insignificant differences surely cannot be used in support of any enthusiastic claims for the alleged marvelous efficiency of the excessive mastication of food, even when judged by the other extreme of food bolting. In another recently published series of experiments on man in which vegetable products, notably potatoes and cereal breads, formed the prominent articles of diet, utilization was apparently improved by good mastication.[3] Neither these nor the earlier quoted results are to be taken as an appeal for complete indifference in the matter of eating, but rather as an indication of the rationality of that happy medium of performance in mastication which is usually a sign of physiologic wisdom in other functions.

1. The Physiologic Effects of Copious Water Drinking with Meals, editorial, The Journal A. M. A., Nov. 30, 1912, p. 1975; Water as a Gastric Stimulant, Jan. 2, 1915, p. 59.

2. Foster, L. F., and Hawk, P. B.: Gastro-Intestinal Studies, VII, The Utilization of Ingested Protein as Influenced by Undermastication (Bolting) and Overmastication (Fletcherizing), Jour. Am. Chem. Soc., 1915, xxxvii, 1347.

3. Abderhalden, E.; Ewald, G.; Fodor, A., and Rose, C.: Versuche über den Bedarf an Eiweiss unter verschiedenen Bedingungen, Arch. f. d. ges. Physiol., 1915, clx, 512.

SPOILED CORN MEAL

A normal crop of maize is estimated by the Department of Agriculture at 3,000,000,000 bushels, and valued at something over $1,500,000,000. Only a small proportion of this total crop comes to market, the larger part by far being fed on farms. Census returns place the value of the corn flour and corn meal at about $66,000,000. From this it will be seen that there is in the corn crop an enormous reserve supply of material suitable for human food, if the demand should direct its use for this purpose rather than for conversion into edible flesh, as now occurs with that portion of the corn fed to farm animals.

There are regions of the United States in which corn is not only the principal cereal product, but also the most important of all articles of diet. This statement applies, for instance, to parts of the South and, in particular, to its rural districts, where wheat flour is of secondary importance and in some cases even a rarity. In many Southern families, even in the cities, corn meal in some form or other is eaten three times a day, and in most families at least once a day. These dietary features have been given a particular signifi-

cance in recent years by those who have regarded corn as an etiologic factor in the production of pellagra. Although it is widely admitted at present that the reference of the essential cause of this disease to the ingestion of either good or spoiled maize is not supported by the scientific studies which have been made,[1] yet the zeist theory of pellagra has not been entirely abandoned.

In any event, however, the spoiling of corn is something real and significant for the food industries and the health of our people. Moisture is perhaps the most important of the controllable factors causing deterioration. During the spoiling, acidity develops quite rapidly, being facilitated in good part possibly by the agency of molds and bacteria, though some of the changes in this direction may be the expression of reactions natural to parts of the grain whenever conditions of heat and moisture are conducive to them. Acidity is one of the indexes of the soundness of corn and its fitness for human consumption.

The spoiling of corn products seems to be most common at the season when the whole kernel is ready to germinate and the germ tissue shows a tendency to activity. Under ordinary circumstances, this arises in the spring during the "germinating season." This process is doubtless merely a result of suitable moisture and temperature, so that a control of these factors offers the hope of checking the changes facilitated by them. Meal should keep through the germinating season, if held in cold storage; and it ought to be liable to spoil even in the winter months if it contains an excess of moisture and is kept in warm storage. There is one feature in the manufacture of corn meal which tends to increase the possibility of spoiling.[2] The places of production and consumption do not coincide geographically. Although the consumption of meal is greatest in the South, the production of corn is greatest in the states of the Middle West forming the "corn belt." In the South, the acreage is given up largely to the production of cotton, and the corn crop is not sufficient to supply the local demand. While the Southern corn is used as far as it goes, and is usually preferred, the larger part of the meal is either ground by Southern mills from Western corn or is milled in the North, usually in or near the region where the corn is grown.

It has long been known that the presence of the germ in the meal increased the tendency to spoil. Grits accordingly keep better than meal from whole corn. Examinations recently made by the Bureau of Chemistry of the U. S. Department of Agriculture[2] show clearly that, in comparison with whole-kernel meal prepared from corn, degerminated, bolted meal both dried and undried shows superior keeping qualities. Even when thoroughly dried, the whole-kernel meal is liable to develop acidity in so short a time as to demand immediate consumption. If meal of this type is preferred because of its greater nutritive value or more oily flavor, it should be milled locally in small quantities and consumed within a short period. To quote the government authorities, in regard to keeping qualities whole-kernel meal may be compared to cream in that it must be delivered and consumed without delay, while degerminated meal may be compared to butter, which, within reasonable limits, keeps until used. A recognition of these facts determined by careful investigation may tend to diminish the danger represented by the use of spoiled corn for table meal.

1. Siler, F. J.; Garrison, P. E., and MacNeal, W. J.: Pellagra, THE JOURNAL A. M. A., Jan. 3, 1914, p. 8.

2. Information in respect to this problem will be found in the paper by Winton, A. L.; Burnet, W. C., and Bornmann, J. H.: Composition of Corn (Maize) Meal Manufactured by Different Processes and the Influence of Composition on the Keeping Qualities, Bull. 215, U. S. Dept. Agric., May 21, 1915.

FEWER BUT BETTER-TRAINED PHYSICIANS

Fifteen years ago a noted educator,[1] who was thoroughly familiar with the conditions underlying medical education, tersely remarked, "We do not need more doctors, we need more doctor." The statistics published last week show that this need is being attained. Fifteen years ago this country had 162 medical colleges, which was over half of the world's supply. Although some were well equipped and well conducted, a large proportion were owned by individuals or by joint stock corporations, and were conducted for profit. In some instances, a professorship could be secured by any physician who bought a certain amount of stock; for a smaller amount he would secure a lectureship. Since these institutions were organized for profit, it was important to secure large classes so the income from fees would be correspondingly increased. Glowing advertisements, follow-up letters and paid solicitors were freely used; thus enrolments were swelled to mammoth proportions. No wonder that the actual number of students fifteen years ago reached the amazing total of 28,142, and that there were 5,747 graduates!

In the fifteen years there has, indeed, been a marked reduction; there are nearly 50 per cent. fewer medical colleges; there are nearly 40 per cent. fewer medical students and medical graduates. Medical colleges sans teachers, sans laboratories and sans ideals have given way to well-equipped medical colleges having fair entrance standards, skilled teachers, modern laboratories and an abundance of clinical material. The sum total of colleges is decreased; the number of better ones has been greatly increased.

Instead of a great army of students, many having not even a grammar school education, and enticed from more fitting occupations by glowing advertisements and "easy" requirements, we now have about half the number; but practically all have had a preliminary

1. "The Contribution of Our Higher Schools to the Life of the Nation," President William H. P. Faunce of Brown University, at the Thirty-Ninth University Convention of the State of New York, July 1-3, 1901, Regents' Bulletin, September, 1901, p. 404.

training which enables them better to understand the more complex problems of modern medicine. As to the opportunities for properly equipped medical students, these have not been diminished, but have been decidedly improved. The tables published last week show that there could be a further reduction in the number of colleges and still allow of a greatly increased student enrolment. And the students would be further benefited by the change, since a greater proportion would be in the better-equipped colleges.

As to the reduction in the number of graduates, surely this country needed "fewer doctors, but more doctor!" For the public welfare it is certainly better to have a hundred well-trained graduates from modern high-grade medical schools than a thousand from the old-time variety of run-for-profit institutions. There is no danger that there will be a dearth of physicians. The annual number of graduates is still nearly double the loss of physicians by death; and even if it were less than the annual loss, it would be many years before a dearth would result because of the seriously overcrowded condition of the profession. There is now one physician to from 600 to 650 people, as compared with one to from 1,500 to 2,500 in the leading nations in Europe. Even with this amazing contrast, we have not included in the figures for this country the hordes of so-called "drugless practitioners," Christian Scientists, osteopaths, chiropractors, naprapaths, etc., who are scarcely found in other countries.

THE HOUSE: ITS UNIQUE PROBLEMS IN HYGIENE

A house erected in accord with modern science and the builder's art must satisfy a few apparently simple needs. These have been cleverly summarized in the following words:[1] protection from the elements, from cold and heat, from rain and snow and damp, from intruders who might interfere with the family safety or possessions; water at hand; some way of getting rid of waste; space for the family, for all their occupations and belongings; room for a guest: these were sought by even the cave dwellers. And we have not passed beyond these simple needs. Our enemies are of a different kind, but the daily paper shows that we must pay for safety locks; and while wild animals no longer prowl about, we find it almost impossible to keep out rats and mice and harmful insects. The "house" fly is now called a "typhoid" fly, and not permitted even as a casual visitor. To all these needs we have added what the cave man did not seek for, since his life was largely out of doors. We must have air and sun within doors. Doctors are now talking about house diseases. Tuberculosis is one of these, and the fight against it must be made, in part, just here. It is for sun and air that we have to pay large rents in town; and it is partly to secure these in our large dwellings that tenement-house commissions exist, to protect those who cannot protect themselves. Then, too, there must be protection against fire, not only by the fire department but also in the house itself. Modern nerves, moreover, demand quiet. We may want our own phonograph, but we do not care to hear our neighbor's, and walls and floors must be built to keep out sounds. We call these simple needs. They would seem to be human rights; but even now, in this twentieth century, how many houses rank 100 per cent. in all these: in warmth and coolness at proper seasons; perfect dryness, ventilation and lighting; safety from fire and intruders; and room for each member of the family to be by himself, and to keep an open door to guests? Yet, we cannot be as well or as happy or as useful as we should, until these are achieved.

Only a few years ago, such subjects were regarded by some as beneath the dignity of scientific investigation. Miss Helen W. Atwater,[2] of the Office of Experiment Stations, remarks that the way in which our homes are run, or, in more technical terms, the science of home economics, is now in much the position that scientific agriculture was in twenty or thirty years ago. The leaders had shown that science can improve crops, and some of the more progressive farmers were giving the new ideas a practical test; but many of the rank and file were still doubtful whether such study was worth while. Few farmers of today, however, would care to go back to the days before experiment stations, fertilizer control and other modern improvements. The creation of a home, to be as efficient as possible, includes many different kinds of questions. It makes necessary much study along many lines, just as agriculture has included problems as different as those of insect pests and cheese making. In solving agricultural problems, every intelligent farmer has done his part as well as the special investigators in the laboratories. In the same way, every intelligent housekeeper who studies the household problems of cooking, cleaning and furnishing, and tries to solve them with the help of both practical experience and scientific information, hastens the day when household management can be as accurately planned as that of the factory and the farm.

There are many features of the situation which appeal to the physician. He is concerned with all the modern questions of industrial hygiene, the dangers of occupations, and the harm which may come to mankind as a direct result of environment and mode of work. In a sense, the house must be considered as a workshop. It is "sometimes a bakery, sometimes a clothing factory, sometimes a cleaning establishment." The house, therefore, should be equipped for effi-

1. Kinne, Helen, and Cooley, Anna M.: Shelter and Clothing, New York, 1914, p. 15.

2. Year Book of the U. S. Dept. Agriculture, Washington, 1914, p. 339.

ciency in carrying on housework just as carefully as a modern shoe factory is equipped for making shoes. In such a factory, lighting, heating, ventilation and sanitation are as carefully considered as the machinery. These matters of hygiene are even more important in the home, which is not merely a workshop, but also a place in which to rest and recuperate.

Ridicule or accusations of extreme faddism no longer greet those who advocate a rational dietary. There is a growing tendency to study the intelligent expenditure of scanty portions of small incomes, so that the purchase of potatoes instead of pickles, and of wholesome food calories instead of advertised dainties and delicacies, is becoming less unusual. It will not be long before a frank discussion of the economy of other features of the home will be more freely tolerated. The rational use of labor-saving devices not only may bring comfort but also may avert difficulties that bring patients to the physician. As Miss Atwater remarks, a machine for washing clothes saves more bodily energy than a patent roasting pan, and a meat chopper is used more often than a device for stoning cherries. There are plenty of problems bordering on the domain of industrial hygiene in relation to household equipment and management.

CELEBRATION OF THE FOURTH OF JULY: A SUCCESSFUL CAMPAIGN FOR IMPROVEMENT

In 1903 THE JOURNAL began the collection of statistics regarding deaths and injuries resulting from the use of fireworks in the celebration of the Fourth of July. In addition to securing data through news-clipping bureaus, blanks were sent to physicians, health officers and hospitals, requesting lists of casualties. From the beginning, special efforts were made to obtain information as to cases of tetanus resulting from these injuries. The tabulated figures of injuries and the enormous proportion of deaths from lockjaw were a revelation. In the report published in THE JOURNAL in 1903 it was shown that in the celebration that year, 4,449 people had been injured, and that 466 had died. Of those injured, many had lost their sight, had legs, arms or hands blown off, or were otherwise maimed for life. Of those fatally injured, 406, mostly children, died a slow, agonizing death from lockjaw. In the report, particular attention was called to the fact that the great majority of lockjaw cases had resulted from blank cartridge injuries, and special directions were given regarding the care of such wounds. Reprints of the report were circulated, but not to so great an extent as was done a few years later.

In the following year, a gratifying improvement was noted in the reduction of deaths from tetanus — ninety-one instead of 406. This reduction was due largely to the wider knowledge and more general use of improved methods in the treatment of such injuries. Aside from the reduction in the number of tetanus cases, however, little or no attention seems to have been paid to the statistics. In spite of the annual publication of the awful results, the number of casualties continued to increase, until in 1909 there were 5,623 accidents, including 215 deaths, 125 of which were from lockjaw!

In 1908, however, in addition to the statistics previously presented, a table was prepared, giving the casualties in eighty-four of the largest cities. This showed that the majority of deaths and injuries were clearly due to the lawlessness and disorder permitted in these cities. The corollary was also clear, that the city governments were responsible. The pamphlet containing a reprint of the report of 1908 was sent to newspapers throughout the country. The response was remarkable. The press generally quoted THE JOURNAL'S statistics, naturally emphasizing the local figures. The facts had touched local pride. Civic and other organizations started campaigns for the suppression of fireworks and the encouragement of a more enlightened celebration. City officials were stimulated to action, and in a single year a remarkable diminution of injuries resulted, as shown by the figures. That progress, with slight fluctuations, has continued, and this year less than one fourth as many injuries are reported including thirty deaths, only one of which was from lockjaw.

It was a foregone conclusion that, once the public was acquainted with the awful facts, a change would be demanded. This has been the case, as the improved conditions bear witness. It is to be hoped that "a safe and sane" celebration of our independence will soon become so universal that there will be neither injuries nor deaths from so needless a cause.

PAUL EHRLICH

Paul Ehrlich was a genius of the first order.[1]

While he was still a student of medicine, the problems presented by the affinity of lead for certain tissues attracted his attention. From speculating on the nature of this affinity, his interest grew to include protoplasmic affinities in general, and thus was determined the direction his genius should take.

Some of the notable results of his early investigations are discoveries in bacterial staining methods, which proved of great value to Koch and which, ever since, have been in daily use everywhere; the microchemical differentiation of leukocytes, on which rests the study of the blood for clinical purposes; the development of the methylene blue reaction of living tissues,

1. See obituary, p. 814. An authoritative summary of the scientific work of Ehrlich is given in Paul Ehrlich, Eine Darstellung seines Wissenschaftlichen Wirkens, Festschrift zum 60. Geburtstage des Forschers (14 März, 1914), Jena, Gustav Fischer, 1914.

and the formulation of that unique conception of protoplasmic structure and function on which he based the great side-chain theory which he advanced to explain the reactions in immunity and other phenomena.

What might be termed the second phase of Ehrlich's work concerned investigations in immunity under the guidance of the side-chain conception. No better illustration of the practical usefulness of the imagination in creating a successful working hypothesis can be given than the results achieved by Ehrlich in the field of immunity. Perhaps the usefulness is seen most clearly in the standardization of diphtheria antitoxin, which was a direct outcome of experiments devised according to the side-chain idea. Ehrlich's method, to the exclusion of others, is used all over the world; but the influence of the work carried out to test the side-chain theory by Ehrlich and his pupils still dominates investigation in all branches of immunity and the practical use of the knowledge obtained therefrom.

The side-chain theory is so well known that it is not necessary to restate it except in the most succinct form. A toxin or other antigen is without action on the animal body unless bound by molecular chains in the cells—receptors. But when so bound, the antigen causes injury to the cell, and subsequent repair, in the course of which there is an overproduction of receptors, which, passing into the blood and lymph, constitute the antibody for the antigen in question, because the antigen is now bound and neutralized or destroyed before it can reach the cell. As expressed by Behring, antibodies are free cell receptors, and the elements which, when situated in the cells, are essential for the action of toxins, for instance, are also the means of healing when free in the blood. In accord with the principles of this theory, Ehrlich's vivid mind coined numerous new words, which proved helpful in the discussion of new facts and ideas, and which soon passed into current international usage.

Ehrlich's last work was the development of the experimental chemotherapy of syphilis and certain other spirochetal infections. To discuss this wonderful work fully in all its ramifications is not possible at this time. The scientific world has accepted "the development through a lengthy series of systematic biochemical experiments, based on original conceptions of the affinities of cellular constituents, of a successful chemotherapy of important human infections, by direct attack on the parasites by substances specially built up for that purpose and introduced from without," as the fitting culmination of the tireless activities of an altogether unique investigative spirit. As pointed out elsewhere, Ehrlich's results in experimental chemotherapy fully justify Huxley's prediction in 1881 that through discoveries in therapeutics it would become possible "to introduce into the economy a molecular mechanism which, like a cunningly contrived torpedo, shall find its way to some particular group of living elements and cause an explosion among them, leaving the rest untouched."

Paul Ehrlich will live in the history of civilization as one of the great investigators, genial, creative, fertile, excelling in "that boldness of the scientific use of the imagination which alone can extend beyond the obvious fact and reveal the unknown," one of the great benefactors of mankind.

IMMUNITY OF LIVING ALIMENTARY MUCOSA AGAINST DIGESTION

An entirely satisfactory explanation of the immunity which the mucosa of the alimentary tract appears to possess against digestion by the enzymes which find their way into the interior of the digestive tube has never been forthcoming. The protective function of the mucus secreted on the inner surface of the gastrointestinal canal, and the occurrence of antienzymes in the lining membranes have been discussed prominently in this connection. The question has more than merely theoretical or academic interest because of the part which it may play in relation to the genesis or healing of ulcers along the alimentary tract.

Certain facts ascertained by Burge[1] at the University of Illinois have been related to this problem of a protective mechanism. In comparing the rate of destruction of various enzymes by the passage of a direct electric current through them, it was found that both pepsin and trypsin are destroyed more easily than are their precursors, pepsinogen and trypsinogen, respectively. Inasmuch as the effect of the current is believed to be due to oxidation, Burge concludes that the enzymes are oxidized more easily than are their proenzymes. This makes it seem possible, from a hypothetic standpoint at least, for the mucosa of the stomach and intestine to protect itself from digestion by means of the oxidative processes which it doubtless can exert. The integrity of the membrane would thus be maintained by rendering inactive the layer of enzyme solution immediately in contact with it. According to Burge, this assumes that there are two opposing activities at work, namely, the active enzyme within the lumen of the digestive tract attempting as it were to digest the cells of the mucosa, while oxidative processes of these cells are rendering the enzyme inactive and hence protecting the mucosa from digestion.

There are familiar facts which lend themselves to interpretation from this point of view. The observation has frequently been made that if the blood supply be cut off from a circumscribed area of the stomach wall, the proteolytic gastric juice begins to digest the tissue. The origin of an ulcer might here be attributed to the freedom of the pepsin to act when the area is left unprotected by the deprivation of oxygen through

1. Burge, W. E., and E. L.: The Rate of Oxidation of Enzymes and Their Corresponding Proenzymes, Am. Jour. Physiol., 1915, xxxvii, 462.

exclusion of the circulation. Burge goes so far as to suggest, in addition, that the increased tendency of tissues to undergo autodigestion in certain diseased states may be associated with a diminution in the oxidative processes known to occur in some of these cases.

Any hypothesis like the foregoing must account for the security of the enzyme precursors in the gland cells themselves, since the latter must contain oxidative properties. For this emergency the fact, cited by Burge, that trypsinogen and pepsinogen are relatively difficult to oxidize has been quoted to prevent these substances from being oxidized in the cells of the pancreas and of the gastric mucosa during the process of secretion. There is surely a preponderance of the unknown and undetermined in the foregoing postulates; but the fairest way to condemn them is not with new hypotheses but with facts, when they are forthcoming.

Current Comment

ACCURACY IN THE DIAGNOSIS OF URINARY CALCULI

Now that accurate methods of diagnosis and clinical analysis are becoming not only familiar but also available to the majority of practitioners and to every physician connected with a clinical institution, the importance of employing modern opportunities deserves renewed emphasis. The statistics gathered in the biochemical laboratory of the Western Pennsylvania Hospital at Pittsburgh by Dr. Rosenbloom[1] in regard to the composition of urinary calculi illustrate this statement. We venture to remark that the majority of physicians who deal with stones in the bladder and other types of renal calculi almost instinctively think of them as composed of uric acid and insoluble urates. Obviously the treatment of this "diathesis" will be based on the hypothesis as to the nature of the deposits in the urinary tract. Rosenbloom has shown that, in the cases which have come under his observation, the large majority of the renal stones are composed of calcium oxalate and not of uric acid or urates. On the basis of a "snap" diagnosis without chemical examination of the calculi, the usual alkaline therapy would probably be instituted in the majority of these cases as a matter of routine. It happens, however, as Rosenbloom points out, that the usual antacid treatment is just the opposite of what is indicated. Although uric acid and its salts are soluble in alkaline mediums, and tend to become insoluble as the acidity increases, the opposite is true for calcium oxalate and calcium phosphate, which are deposited in alkaline mediums and dissolved by acids. These are facts—those stubborn things which insist on being respected. Facts deserve to be seen, for mental nearsight may have direful consequences, especially in medical matters.

1. Rosenbloom, Jacob: A Further Study of the Chemical Composition of Urinary Calculi, THE JOURNAL A. M. A., July 10, 1915, p. 161.

THE SYNTHESIS OF HIPPURIC ACID

The protracted discussion known as the benzoate of soda controversy has served to direct attention to the synthesis of hippuric acid in the body. This compound, as is well known, represents the product in the form of which benzoic acid and its salts are eliminated from the organism after being united with the amino-acid glycocoll. To classic experiments carried out by Bunge and Schmiedeberg nearly forty years ago is due the commonly quoted statement that the kidneys are preeminently the organs in which the synthesis of hippuric acid from benzoic acid and glycocoll is accomplished. In the original experiments on this subject, no hippuric acid could be detected after benzoate administration, if the kidneys of the animals examined — dogs in these cases — were excluded from participation in the bodily functions. Of late, the methods of detecting and estimating hippuric acid have been greatly improved, so as to make possible the determination of comparatively small quantities. Making use of these newer, more delicate procedures, Kingsbury and Bell[1] at the University of Minnesota have reinvestigated the problem of the place of hippuric acid synthesis in the species in which the earlier investigators had made their widely quoted observations. They have found that considerable amounts of hippuric acid may be synthesized even in nephrectomized dogs. It therefore follows that the kidney is not the only organ which may effect this synthesis.

ADVERTISING METHODS IN PUBLIC HEALTH WORK

The modern public health movement has been a development of the present generation, almost of the last decade. Two distinct methods, based on equally distinct lines of reasoning, appear to have been adopted. One view assumes that public health must be secured and maintained by means of a great organization, a state health police force, which will prevent the violation of the laws of health in the same way that the regular police force prevents crime. The other view aims rather at the education of the people, so that the laws of health will become common property and the power for their enforcement will lie in public opinion. The advocates of the first theory devote themselves to securing larger appropriations, so that more inspectors can be employed. The advocates of what may be called the educational method endeavor rather to spend such funds as are available in presenting basic facts to the people in a strikingly impressive and convincing way. In this educational work, the State Health Department of Virginia has been especially prominent. Few, if any, states with as limited funds have been able to produce so many new and excellent educational devices. The *Health Almanac*, now used by six or seven states, was first issued from Virginia. The State Department of Health saw no reason why the household almanac should be monopo-

1. Kingsbury, F. B., and Bell, E. T.: The Synthesis of Hippuric Acid in Nephrectomized Dogs, Jour. Biol. Chem., 1915, xxi, 297.

lized by nostrum venders. The latest innovation from Virginia is another device, captured from the "patent medicine" advertising agent. Any one who has driven in country roads and lanes is familiar with the omnipresent tin sign, tacked on fences, gate posts, telephone and trolley poles, and even on trees and the sides of barns, urging the public to try "Dr. Killem's Sure Cure for Bright's Disease" or "Ketcham's Old Reliable Cure for Consumption." Obviously, such advertisements caught the public eye and held attention, or "patent medicine" firms would not continue to employ them. Why not use the public highways to advertise health as well as quackery? No sooner said than done. A series of six placards, printed in black on yellow tin sheets, 10 by 14, are being tacked up all over the Old Dominion. The farmer, the automobilist, the country swain riding with his sweetheart, even the humble foot traveler trudging along the dusty road, will now see from fence posts, walls and telegraph poles such messages as these:

THE BEST FARM IN THIS COUNTY
is the one on which the health of the family is best protected.

BEWARE MOSQUITOES.
They breed in stagnant or slowly running water.

TYPHOID FEVER
CAN BE PREVENTED.

The education of the people in regard to health is advancing when the trees and posts by the wayside are converted into heralds of good health and disease prevention.

THE RELATION OF MUSCLE WORK TO MUSCLE FATS

The determination of the source of the energy which is transformed when a muscle works is one of the fundamental problems of physiology. Precisely what materials are used up in the contractile processes seems to depend somewhat on the nature of the material available at any time. There is an abundance of evidence that the organism does not destroy nitrogenous components by preference when it is called on for increased muscular exertion. The output of nitrogenous waste products excreted by the kidneys is not notably augmented when the work factor in the daily routine is increased while the diet remains unchanged. In fact, it has been found that muscular work does not alter the respiratory quotient — that ratio of the carbon dioxid produced to the oxygen consumed which gives an indication of the kind of nutrient undergoing metabolism. In other words, during work the qualitative metabolism of the whole body is the same as during rest. In the absence of food, as for example in an excised muscle, work is performed at the expense of the stored-up nutrients. There is an insignificant change in the nitrogenous components observed under such conditions. The carbohydrate of the muscle, on the other hand, is invariably drawn on during such survival life; this method of study has frequently been used in the hope of throwing light on the metabolism of the intact living muscle in work. The glycogen decreases. In the presence of a sufficient supply of oxygen, oxidations take place with the evolution of carbon dioxid, and the oxidations increase whenever the muscle contracts. It is also certain that when the oxygen supply is deficient, lactic acid accumulates in the muscles, and, on the other hand, that it disappears again when the oxygen supply is restored and the muscle recovers from fatigue. Chemically it is conceivable that this production of lactic acid may be associated in some way with a metabolism of fats in muscle quite as well as with the carbohydrates. Heretofore little has been known as to the fate of muscle fat in the course of the contractile changes, and whether or not it shares in the extensive chemical changes known to take place in excised muscle. At the University of Cambridge, Winfield[1] has studied what part, if any, is played by fats in the chemical events associated with muscle during its survival life. Despite the induction of work to the point of fatigue and exhaustion, he obtained no evidence that there is any change in the fat content of amphibian muscle, during the metabolic changes occurring in the survival period, which would be sufficient in amount to account for the development of the lactic acid which is known to be produced. To sum up, as a whole the results seem to indicate that fats differ from the carbohydrates in availability for the direct supply of muscular energy.

BLOOD ALKALINITY DURING DIGESTION

The "alkaline tide" in the urinary secretion is an expression which was widely current not many years ago, and was intended to indicate the tendency of the urine to show a reaction alkaline to litmus during the period of gastric digestion. It was usually explained on the assumption that the withdrawal of acid into the interior of the stomach to furnish the gastric secretion left a preponderance of bases in the blood. The kidneys thereupon exercised their characteristic regulatory response by eliminating some of the excess of bases in the urine. It has also been noticed that the alveolar tension of carbon dioxid in the lungs usually rises after meals. This phenomenon is capable of several interpretations, which Van Slyke, Cullen and Stillman[2] of the Hospital of the Rockefeller Institute have expressed as follows: It is possible that acid digestion products displace carbon dioxid from the blood, and, during this displacement, the rate at which carbon dioxid passes from blood to lungs is increased. Or, the blood may become more alkaline, as the result of the secretion of gastric hydrochloric acid, or absorption of alkaline digestion products. Consequently, the carbon dioxid capacity of the blood is increased, and, in equilibrium with it, the carbon dioxid tension of the alveolar air of the lungs rises. The hypotheses here presented are, it will be noted, based on diametrically opposed explanations. A well-known publicist remarked a few days ago that facts

1. Winfield, G.: The Fate of Fatty Acids in the Survival Processes of Muscle, Jour. Physiol., 1915, xlix, 171.
2. Van Slyke, D. D.; Cullen, G. E., and Stillman, E.: Changes in Blood Alkalinity During Digestion, Proc. Soc. Exper. Med. and Biol., 1915, xii, 184.

have a cruel way of substituting themselves for fancies. There is nothing more remorseless, just as there is nothing more helpful than truth. It is well, therefore, to be on the right side of facts. The New York investigators[2] have accordingly determined, on each of a number of subjects in conditions of approximate digestive rest and of digestive activity, the following data: alveolar carbon dioxid tension; alkaline reserve of the blood plasma as indicated by its ability to maintain its alkalinity after addition of acid and alkaline reserve of the plasma as indicated by the amount of carbon dioxid with which it can combine. The results show that the reserve alkalinity of the plasma increases during digestion, the alveolar carbon dioxid decreasing simultaneously. This excludes the possibility of the absorption of acid products of digestion as an explanation of the phenomena in question.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Diphtheria Cottage.—The board of supervisors of San Francisco County has voted $7,000 for the construction of a diphtheria cottage at the county isolation hospital.

Alumni Election.—At the annual meeting of the Alumni Association of the College of Physicians and Surgeons of San Francisco, the following officers were elected: president, Dr. Frederick C. Keck; vice-presidents, Drs. Stefan Wassilko and Richard H. Dunn; secretary, Dr. Charles M. Toppman (reelected), and treasurer, Dr. Philip S. Haley (reelected).

New Health Association Officers.—At the annual meeting of the Health Officers Association of Los Angeles County, at Long Beach, July 27, the following officers were elected: Dr. Ralph L. Taylor, Long Beach, president; Drs. Stanley T. Black, Pasadena, William A. Weldon, San Pedro, Luther M. Powers, Los Angeles, Francis E. Corey, Alhambra, and W. C. Mabrey, Long Beach, vice-presidents, and J. L. Conroy, Monrovia, secretary-treasurer.

Personal.—Dr. William P. Lucas has been appointed chairman of the committee on open air schools of the San Francisco Association for the Study and Prevention of Tuberculosis; Dr. William R. P. Clark, chairman of the committee on cooperation and Dr. George R. Hubbell, chairman of the committee on investigation.——Dr. James J. Hogan, San Francisco, sailed for Europe from New York, on the *Bergensfjord* July 24, for Bergen, Norway, to test in the war zone the intravenous use of colloidal (gelatin) solutions in shock.

Pediatric Society Organized.—At a meeting held July 23 at the Barlow Medical Library, Los Angeles, the Pediatric Society of Southern California was organized. Dr. W. A. Edwards was elected president and Dr. Victor Stork secretary and treasurer. The society has for its object the advancement of the study of infancy and childhood, and to this end will include as associate members those interested in the various phases of child study. An effort is being made to show the government child welfare exhibit in Los Angeles under the auspices of the society.

ILLINOIS

Personal.—Dr. Oliver J. Roskoten, Peoria, fractured his right arm while cranking his automobile, August 3.——The condition of Dr. Frank C. Winters, Monmouth, is so much improved that he is expected to be able to return home in a few days.

Outbreak of Foot and Mouth Disease.—Another herd of cattle infected with foot and mouth disease was discovered in Cook County, August 13. The affected cattle were on land adjoining that where the disease was found recently in Wheeling township.——The Department of Agriculture announces that the situation in Bureau, Ford, Lawrence and McDonough counties remains unchanged.

Chicago

Corwin Made Publicity Director.—Dr. Arthur M. Corwin has been appointed director of publicity and education of the department of health.

Personal.—Drs. John Dill Robertson, Commissioner of health, and William K. Murray, head of the hospital bureau of the department, are making a tour of Eastern cities to study garbage disposal methods, housing conditions and isolation hospitals.

To Examine Veteran Policemen.—Drs. Clarence W. Leigh, Charles J. Whalen, William L. Noble, Nathaniel A. Graves and Michael J. Purcell have been appointed a board to reexamine veteran policemen who had been announced unfit for service by the Chief Ambulance Surgeon and who contested this decision.

Chicago's Health Department.—The Chicago Civil Service Commission recently commenced the study of the city's health department, and called to its aid a representative of the Public Health Service. J. C. Perry was assigned to the work, and in *Public Health Reports*, August 20, makes an extended report of his four months' study in connection with the representatives of the Civil Service Commission. Every department and feature of health administration in Chicago is given a critical study, and the findings, which are too voluminous to abstract here, are interesting. Incidentally the lack of sufficient appropriations for carrying on effective work, particularly in the infant welfare department, is emphasized.

Typhoid Fever.—The *Bulletin of the Chicago School of Sanitary Instruction* gives a compilation of typhoid cases for the first six months of 1915, which shows that there were 347 cases with definite dates of onset. By months they were as follows: January, 79; February, 48; March, 91; April, 54; May, 37, and June, 38 cases. Investigation of the source of infection shows that 18 cases may be charged to contacts, 5 to carriers, 36 to unpasteurized milk and 48 to out-of-town sources. Of these cases, 181 patients were treated in hospitals, of whom 28 died, or 15.47 per cent. Of 161 patients treated at home there were 20 deaths, or 12.05 per cent. The higher percentage of deaths in hospitals is accounted for by the delay in entering the hospital, the greater severity of the cases, and by the character of the patients, many of whom were homeless persons and in poor physical condition to start with.

MASSACHUSETTS

Hospitals May Lose By Mexican Troubles.—The continued disturbances in Mexico have so depreciated the estate of Dr. F. S. Pearson that it is doubtful whether his desire to aid several New England institutions can be carried out. Tufts College, Boston, which was to receive $500,000 will be the heaviest loser. The Pittsfield House of Mercy and the Lawrence General Hospital will also suffer to the extent of $50,000 each.

Personal.—Fire in the Columbus Building, Westfield, June 24, seriously damaged the offices of Drs. Archibald J. Douglas, James B. Atwater and Julius M. Dutton.——Dr. William J. Gallivan, health commissioner of Boston, resigned July 30.——The Civil Service Commission of Boston has confirmed the appointment of Dr. Francis X. Mahoney as municipal commissioner of health.——Dr. Chas. W. Milliken, Barnstable, has been named by the governor as medical examiner.

MICHIGAN

State Society Meeting.—The semi-centennial meeting of the Michigan State Medical Society will be held in Grand Rapids, August 31, and September 1 and 2, under the presidency of Dr. Reuben Peterson, Ann Arbor. Unusual preparations have been made by the committee of arrangements for the entertainment of members and delegates.

Personal.—Dr. A. S. Spoore, according to reports, has been appointed state bacteriologist in charge of the labora-

tory at Lansing, succeeding Dr. Marinus L. Holm, transferred to the branch laboratory to be established at Houghton.——Dr. William DeKleine, Grand Haven, well known as a good-roads advocate, has been elected director of the campaign against tuberculosis, for which $100,000 was voted by the State Legislature at its last session.

Sanatorium Notes.—The contract for an addition to the wing of the Saginaw Detention Hospital for Tuberculosis was awarded August 3.——A tuberculosis hospital is being made ready for the tuberculosis patients of Cadillac and Wexford County.——An addition to the Ingham Sanatorium, to be known as the Dakin Memorial Hospital, is being constructed at a cost of $2,000.——The board of trustees of the State Sanatorium, Howell, is planning to provide at that institution, a building for girls, one for boys and a third as an administration building for the children's group, containing the necessary offices, a dining room and a school. The $12,000 appropriated by the last legislature will be sufficient to erect the first unit of this group.

MINNESOTA

Public Health of Minnesota.—At the annual meeting of the Minnesota Public Health Association held at Minneapolis, August 12, Dr. Henry Wireman Cook was elected president. In his address Dr. Cook stated that there were 11,000 preventable deaths annually in Minnesota, and that many thousands more are made invalids or cripples by preventable diseases and preventable accidents. Through the efforts of various welfare societies in the direction of public education, it is beginning to be realized by business houses that good health among their employees is a vital factor in efficiency.

Sanatorium Notes.—Plans have been prepared for a sanatorium to be built at Worthington on Lake Okabena by the Southwestern Minnesota Tuberculosis Association. The institution is to be two stories and basement in height, and is to consist of a main or administration building with a building on either side connected with the main building by corridors.——Contracts have been awarded for the erection of a tuberculosis sanatorium on the shores of Lake Julia, near Puposky. This sanatorium is being erected jointly by the counties of Beltrami, Koochiching and Hubbard, at a cost of $40,500.——Up to the present time, thirty-one Minnesota counties have taken advantage of the county tuberculosis sanatorium law. In fourteen other counties, hospitals are either ready to open or are under construction. ——At present four sanatoriums are in actual operation; the state sanatorium in Cass County with accommodation for 200 patients; the Nopeming, in St. Louis County, with accommodation for 120 adults and twenty children; the Battle Lake, Ottertail County, with accommodation for twenty-four patients and the Ramsey County, St. Paul, which cares for 110 patients. ——The Hennepin Sanatorium, near Hopkins, with sixty beds and the Goodhue Sanatorium at Cannon Falls, with thirty beds, will be ready for use by fall.——In March of next year the sanatorium for Clay and Becker counties, at Lake Park, with thirty beds; for Polk and Norman counties at Crookston, with forty-five beds; for Beltrami, Hubbard and Koochiching counties at Puposky, with thirty beds; for Lac Qui Parle, Chippewa, Yellow Medicine and Renville counties at Granite Falls, with forty-five beds, will be ready. ——In April the sanatoriums for Lincoln, Pipestone, Rock, Lyon, Murray, Nobles, Cottonwood and Jackson counties, at Worthington, with forty beds; and that for Wabasha County at Wabasha City, with twenty beds, will be ready. The fall of 1916 will see completed the sanatoriums for Marshall and Roseau; Todd and Wadena; and Crow and Aitkin counties.

MISSISSIPPI

Eradicating Anthrax.—At Jackson early in August the discovery of anthrax among cattle in a private pasture in the city led to prompt measures to eradicate the dangerous infection. As a first step all the buzzards in the neighborhood were killed, taken to the garbage crematories and burned. The cattle in the infected pasture were put in quarantine for two weeks and the grass in the pasture will be burned over. Virus was sent for and all the exposed cattle were inoculated. It is believed that the infection was carried to Jackson by buzzards from Natchez where anthrax existed among cattle.

MISSOURI

State Sanitarians to Meet.—The second annual meeting of the Missouri Valley Public Health Association will be held at the Coates House, Kansas City, September 28 and 29, under the presidency of Dr. Paul Paquin, health officer of Kansas City.

Pellagra Commission Created.—A board of health consisting of the commissioner of health and sanitation, the mayor and the city physician has been created by the city commission of Joplin to enforce health regulations with regard to communicable diseases, with especial reference to pellagra.

Used Dead Doctor's Name.—The health department of Kansas City has arrested Lee Toy, a Chinaman operating under the name of Dr. Roe Chung, on the charge of practicing medicine without a license. Dr. Chung, who held a certificate from the state board of health, died a year and a half ago.

Alumni Reunion.—The Alumni Association of the Washington University Medical School, St. Louis, will hold a reunion October 4 to 8. Clinics and lectures will be given at the various hospitals by graduates and by the teaching staff of the medical schools. The same dates will include Veiled Profit Week and the visiting members will be provided with tickets to the ball of this organization.

NEW JERSEY

Donation Day at the Seashore Home.—August 11 was donation day at the Seashore Home for Invalid Children. During each summer the home maintains 500 mothers and children at a cost of $2,500 a week.

NEW YORK

Physician Leaves Large Estate.—An appraisal of the estate of Dr. Philip M. Wood, who died in Jamaica, May 14, gives its value as nearly $500,000, the greater part of which is in real estate mortgages.

Enforcement of Vital Statistics Law.—The State Department of Health has again called the attention of the physicians of the state to the fact that violations of the Vital Statistics Law, requiring the report of births within five days of their occurrence, will be prosecuted by local district attorneys. The enforcement of this law is not only a matter of great value to the state, but is also of national importance. The administration of the law is being watched with great interest throughout the country, as indicated by telegrams received by the Department from the Federal Children's Bureau and the U. S. Public Health Service. The law provides a penalty of from five to fifty dollars fine for the first offense in the case of a physician or midwife who fails or neglects to file a birth certificate within five days, and from ten to one hundred dollars fine in the case of a second offense.

New York City

Personal.—Dr. Cecile L. Greil sailed on the *Stamphalia* for Naples, August 21.

Cooperation with Health Department.—On August 5 the directors of the Retail Drygoods Association voted unanimously to establish a committee on health and sanitation, cooperating with the health department in maintaining sanitary conditions in the great department stores among the 50,000 members of the association.

Typhoid on Hart's Island.—There has been an outbreak of typhoid fever among the prisoners in the workhouse on Hart's Island during the past month. There have been sixty cases of a very mild type with one death. Thus far the source of the epidemic has not been discovered, but it is suspected that it has been due to a carrier. Of the 700 inmates of the institution all have undergone antityphoid inoculation and it is believed that the epidemic is now under control.

On Watch for Cholera.—Dr. Joseph O'Connell, Health Officer of the Port of New York, has issued an order requiring special examination of all persons on board vessels from Venice, Leghorn and north and east of Rimini, localities where cholera has appeared. The manifests of all vessels will be examined to determine the original point of departure of all steerage passengers on board and any found to

have been within the infected area will be reported to the health officer for bacteriologic examination.

Industrial Hygiene Clinic.—The new division of industrial hygiene has established a clinic at 49 Lafayette Street, Manhattan, with general and laboratory equipment suitable for the work. More than eight thousand bakers, peddlers and soda fountain clerks have been examined and certified as to freedom from contagious diseases. More than nine hundred employees of the fur industry and those of a number of rag clipping shops have also been examined in the clinic, and factory surveys of 113 shops in the fur and allied industries have been completed, and studies of paint, chemical and color factories have been made. On complaints of citizens, examinations have been made and among other things nine cases of tuberculosis, three of syphilis, etc., have been found in restaurants and other places. Occupational mortality statistics are being prepared to show the influence of occupation on the death rate in the community.

Plan to Unify and Improve Supervision of Tuberculosis.—Two new procedures have recently been put into effect at the Tuberculosis Hospital Admission Bureau and in the various tuberculosis institutions which will go far to secure the unified control of the tuberculosis hospitals maintained by the Department of Health, the Department of Charities and by Bellevue and the Allied Hospitals and the tuberculosis sanatoriums maintained by the Department of Health and the State of New York. These procedures are the appointment of a special committee, consisting of Mr. A. W. Wilson and Dr. John S. Billings, to supervise and control all matters relating to the admission and discharge of consumptives to tuberculosis institutions. The tuberculosis institutions maintained or subsidized by the city have been classified primarily as to the social status of the patients received and secondarily as to the patient's physical condition. This classification consists of institutions for patients only temporarily dependent through illness, and those for patients in a chronic dependent plight. If necessary patients may be admitted to an institution receiving a lower class of patients but not to one admitting a higher class. With the exception of incipient and early favorable cases, the presence of tubercle bacilli in the sputum is a prerequisite for admission to a tuberculosis institution. A more detailed investigation of the home environment and financial status of patients will be made and a representative of the Hospital Admission Bureau will visit all tuberculosis institutions at regular intervals, the larger ones daily and the smaller less often.

Myopia in School Children.—A committee, consisting of Rev. James F. Smith, Dr. William F. Snow, Dr. Thomas A. Storey, Dr. C. Ward G. Crampton, Dr. Ward A. Holden, Mr. E. F. Brown, and Dr. Ira S. Wile, which was appointed March 20 for the purpose of considering a communication from the Public Health Committee of the Academy of Medicine relating to the question of myopia in schoolchildren, has submitted its report. This report considers the questions of lighting, writing, blackboard work and the standards for books. Among the recommendations made are the following: That, as rapidly as possible, old nonadjustable school furniture should be replaced by the more modern and more adjustable furniture; that at the beginning of each school year a circular be sent to all principals of schools calling their attention to the importance of adjusting school furniture to the needs of the individual; that movable furniture be provided for the first few grades especially, with the approval of the fire department; that the Department of Education should make an investigation and study of the slope of desks to determine some feasible plan of providing a desk-top capable of prompt adjustment to the proper angle for writing purposes; that special attention be paid to the importance of bringing books up toward the eye of the child, instead of permitting the child to bring the eyes closer to the book; and that the Department of Health emphasize the importance of the relation existing between correct posture during writing and spinal curvature and visual defects. A number of suggestions were made with reference to proper lighting and the opinion was expressed that the use of colored crayons should be interdicted except for unusual work. The tentative standard for approving textbooks for pupil's use as adopted by the Board of Superintendents was thought to cover the details desirable in textbooks and was tentatively approved.

NORTH CAROLINA

Birth Registration Neglected.—The North Carolina State Board of Health announces that there are 72,000 infants in North Carolina without names registered under the vital statistics law.

Antityphoid Campaign Comes to a Close.—The antityphoid campaign in Durham County after five weeks of activity came to a temporary close August 2. During this time about 8,000 individuals received the antityphoid inoculation.

Sanatorium Merger.—The Charlotte Sanatorium Company has rented and will operate the Charlotte Sanatorium. Dr. Edward C. Register is president of the company and general manager of the institution, which is well equipped and has an efficient staff in its various departments.

Personal.—Dr. Oliver G. Falls, Kings Mountain, was elected president of the North Carolina State Organization of County Commissioners at the annual session in Morehead City, August 10 and 11.——Dr. John C. Wessell, Wilmington, has been appointed local surgeon of the Seaboard Air Line Railway, vice Dr. Morris M. Caldwell, accidentally drowned early in August while visiting an interned German ship in the harbor.——Dr. Isaac A. Harris, Alexander, the oldest living practitioner of medicine in Buncombe County entertained the members of the Buncombe County Medical Society at his country home with a lawn fête August 14. A large delegation of Asheville physicians motored down. ——Dr. John W. MacConnel, Davidson, is spending his summer vacation in postgraduate work in New York City. While active in the organization work of the Red Cross, the rumor that he would go to Europe to engage in the field work of the organization is incorrect. He expects to resume his duties as college physician and instructor at Davidson College with the opening of the autumn session.——Dr. James C. Braswell, Jr., Whitakers, has been elected full-time health officer of Nash County, succeeding Dr. A. H. Kibler, resigned, to take service with the United States Health Commission in Dutch Guiana, South America.

NORTH DAKOTA

Reciprocity Extended.—Indiana has been added to the list of states with which North Dakota has reciprocity in the licensing of physicians. Such relations have been established by the North Dakota State Board of Medical Examiners with Arkansas, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, South Dakota, Texas, Vermont, West Virginia and Wisconsin.

PENNSYLVANIA

Personal.—Dr. George W. McNeil has been appointed postmaster of Pittsburgh.——Dr. Joseph R. Cox, Newcastle, is reported to be seriously ill at his home with septicemia.

Smallpox Near Norristown.—A case of smallpox was discovered at Skippack, eight miles from Norristown. The victim was a farmer, who had been ill one week but had been able to serve milk to summer boarders staying at boarding houses near the farm.

Leper Fenced About.—In order to keep the curious from coming in contact with Joseph Norman, Wilkes-Barre, declared a leper several months ago and since that time under quarantine, the city commission has directed that a board fence 8 feet in height be erected around his house.

Tuberculosis Most Fatal.—Tuberculosis still stands in the foremost rank of disease that levy heavy death tolls in Pennsylvania. Nearly 1,000 persons died in May, according to the monthly report of the Bureau of Vital Statistics. Of this number 857 died of tuberculosis of the lungs and 130 of tuberculosis of other organs.

Occupational Eye Diseases.—Surgeon J. W. Schereschewsky, U. S. Public Health Service, is conducting extensive laboratory work at the new federal laboratory in the U. S. Marine Hospital, Pittsburgh, regarding the effect of heat and light on mill workers to determine the action of infra-radiation to which has been attributed glass-workers cataract and other occupational diseases.

Drug Users to Be Registered.—All known users of a narcotic drug must be registered at once. This step is taken as an indication that the United States government is determined to eliminate the use of harmful drugs. Since the Harrison act went into effect, the consumption of narcotics has decreased greatly, but the act has not controlled the drug habit.

Food Law Violators Arrested.—Fifty-six defendants, the largest number arrested by the pure food agents in months, had hearings before Magistrate Harris on August 13. The majority of arrests were for selling soda water artificially colored or sweetened with saccharin, and followed a raid made on the storekeepers in the congested districts where the children can buy soda water for a penny the glass. Nearly all were either fined or held for court.

Philadelphia

Charter for Hospital Granted.—A charter for the Misericordia Hospital, the institution to be erected at Fifty-Fourth and Cedar Avenue for the Sisters of Mercy was recently granted by the Court of Common Pleas. For the purpose of building this institution, a fund of $200,000 was raised in a campaign.

New Health Rules to Be Taught in Schools.—Instead of physiology being taught in schools, a simplified course outlining the rules of health will take its place. The critical test at the end of the term will be to determine not how much the children know, but how their knowledge in building up health bodies for themselves has been applied. The school boards want the boy and girl to know not only that fresh air and sunshine are good for them, but to prove it for themselves in daily life. The new course is elemental in its simplicity. Nothing will be taught that cannot instantly be applied.

Civil Service Examinations.—The civil service commission of the city of Philadelphia has scheduled examinations for the following positions September 16: chief of the division of housing and sanitation of the bureau of health, with a salary of $3,100; September 17, medical inspector (women), division of child hygiene, with a salary of $1,000; September 23, assistant chief medical inspector with a salary of $2,400, and September 24, chief of the division of child hygiene, with a salary of $3,000. Applications for any of these positions should be made in person at Room 875, City Hall, Philadelphia.

Campaign Against Mosquitoes.—Since the recent rains the mosquito brigade of Chief Connell of the highway bureau has treated more than 353,000 square feet of standing water with oil, filled approximately 300 pools and made 50 miles of ditches to drain marshes where the pests breed. The men have been instructed to cut down the weeds on vacant lots. On August 20, fifty employees of the Bureau of Highways went to work to clear the mosquitoes of the swamps near League Island. The marshland is owned by the city and the work of clearing was begun after an investigation by a body of residents of West Philadelphia. The work is being carried on along the Government Avenue east of Broad Street and at the Curtin Street canal. Only $3,500 was appropriated this year and those who have investigated the matter declare that $50,000 is needed to wage a warfare which should be begun in January when the marsh lands are frozen and can be cleared and trenched with little difficulty.

SOUTH CAROLINA

Bequest to Infirmary.—By the will of the late Rosa Thompson of Charleston a bequest has been made to the Riverside Infirmary for the erection of an annex or the enlargement and remodeling of the present building.

Applying the Diet Treatment of Pellagra.—An arrangement has been entered into between the United States Public Health Service and the Epworth Orphanage at Columbia for the application of the diet treatment of pellagra among the children in the orphanage afflicted with this disease. The control of the diet arrangements of the orphanage have been placed in control of the Public Health Service, and the service will prescribe the diet and furnish the protein portions thereof. All facilities and privileges are to be allowed the government authorities for carrying on the diet treatment, the arrangement to continue two years unless terminated by either party unless it is found unsatisfactory or impracticable to continue it.

TEXAS

Personal.—Dr. Willard S. Hastings, superintendent of the Salome Hospital and also of the hospital of the San Antonio and Aransas Pass Railway at Cuero, has resigned to accept a position in a hospital in Chicago.

Blind Asylum Sites.—Tentative offers of sites for the new blind institution for the establishment of which the last legislature made an appropriation of $325,000 have been made by Austin, Lampasas, Brownwood, Wichita Falls, Sweetwater, Valley View, Waco, Temple and Dallas.

Health Week in El Paso.—Health week will be celebrated in El Paso from September 27 to October 3 inclusive. The program includes a baby show for the first three days; the Southwestern Health Conference for the next three days, and also a report on the El Paso health survey; a conference of public health officials; a tuberculosis conference and the reading of papers on the care of the sick, housing conditions, sex hygiene and control of contagious diseases.

WISCONSIN

School Health Station Established.—The first diagnostic health station to be established in the public schools by the Milwaukee health department has been opened in the Cass Street school.

Health Service in Wisconsin.—The Wisconsin Association of Graduate Nurses has decided to start a campaign for the establishment in the state of a generalized nursing service, each unit of which is to cover a fixed district.

Personal.—Dr. Leslie H. Redelings, Marinette, has received a fellowship in the Mayo Clinic, Rochester, and will remain there for three years.——Dr. Orville Mackellar, Delavan, is under treatment at Chicago for a compound fracture of the hip.

Free Medical Dispensaries in Milwaukee.—Steps toward establishing free medical dispensaries in Milwaukee, under the Mathew Keenan endowment fund of about $300,000.00 will be taken after the estate of the testator's widow has been settled in the county court.

Eugenic Law Disobeyed.—For the first eighteen months in which the eugenic law was in effect 231 Milwaukee couples have been married in Waukegan, Ill. Of these only 12 have filed the medical certificate which it is provided shall be filed within ten days by citizens of Wisconsin marrying outside of the state.

State Board's Duties Lessened.—The State Board of Health has recently made the discovery that one of its subsidiary functions, that of the examining and licensing of graduate nurses, has been taken from it and given to the state board of medical examiners under the enactment revising the general medical laws of the State.

Change in Eugenic Certificate.—The old certificate required since January, 1914, when the eugenic marrying law came into force, has been changed and the fee reduced from $3.00 to $2.00. The new certificate states that, the physician "has made a thorough examination of ..... and believes him to be free from all venereal diseases." The former certificate stated that, the physician "having applied the recognized clinical and laboratory tests," etc.

CANADA

Salvarsan Substitute.—Under the patronage of the University of Toronto, "diarsenal" is now being manufactured in Toronto, as a substitute for salvarsan.

Medical Men Attend Training Camp.—Eighteen Toronto physicians have applied to attend training school for medical officers at the military camp at Niagara-on-the-Lake, Ontario. The camp now totals 9,342 men, and the hospital report shows 107 men sick.

Special Tuberculosis Investigation.—Dr. Walter Bingham Kendall, superintendent of the Sanatorium for Tuberculosis at Sanitarium, Ontario, will shortly report on special investigations in connection with disease of the lungs which he has been conducting for some time.

Queen's Hospital Unit.—Word has been received in Kingston, Ont., that Queen's stationary hospital which left Eng-

land on August 1, reached Alexandria, Egypt, August 12. There are about 200 in the hospital unit under the command of Lieut.-Col. Frederick Etherington.

Pension Board.—A medical board in connection with pensions for soldiers has been established at Niagara Camp, Niagara-on-the-Lake, Ontario. Each pensioner will be examined annually to ascertain whether his physical condition warrants his name remaining on the pension list for another year.

Reciprocity.—Under a statute relating to the faculty of medicine, the Province of Ontario is declared, by order-in-council, to be a separate British possession, to which the second part of the Medical Act of Great Britain of 1886 shall be applicable. This is the final authority for medical reciprocity between Ontario and Great Britain.

Inspection of Resorts.—Dr. Adam H. Wright, Toronto, chairman of the Ontario Board of Health, and Dr. George Clinton, Belleville, Ont., district medical officer of health for that section of Ontario, recently made an official inspection of the summer resorts in eastern Ontario. They report the hotels and lake resorts in a very satisfactory sanitary condition.

Personal.—Dr. John R. Whitham, Brantford, Ont., has left for Montreal, having secured a commission in the third McGill University overseas company.——Drs. James A. and Lorne F. Robertson, Stratford, Ont., have each contributed $1,000 toward machine guns for Perth County soldiers.——Dr. James L. Wilson, Toronto, who enlisted with the Imperial Army Medical Corps, arrived in England August 3.——Dr. Dana A. Volume, Erskine, Alta., who has been visiting his home in Kingston, Ont., has received an appointment with the Royal Army Medical Corps.——Dr. George B. Ryan, Paris, France, is visiting his old home in Dorchester, N. B. He will return to Paris in the autumn.——Dr. J. M. Lacey, Winnipeg, has been appointed assistant chief medical officer for the National Transcontinental Railway.——Dr. John Franklin Duncan, London, Ontario, has been appointed assistant surgeon to the mounted police at Regina, Sask.——Dr. L. T. Davis, Vancouver, has been appointed ship's doctor on the Blue Funnel Line Steamship, *Talthybius*.——Dr. Clarke, Calgary, with a party of forty of the Army Medical Corps, has gone to the front.——Dr. Ella C. Scarlett Synge, Vancouver, has left for Serbia in command of the Woman's Volunteer Reserve of Vancouver.——Drs. Frank S. Keele and Herbert A. Gordon, Portage La Prairie, Man., have left for France to join No. 3 Stationery Hospital.——Dr. James H. Hamilton, Revelstoke, B. C., has been gazetted medical officer to the fifty-fourth battalion in camp at Vernon, B. C.——Dr. Lloyd Warner, house surgeon, Winnipeg General Hospital, has departed for overseas service.——Dr. J. F. Hummell, Stratford, Ont., who was wounded on May 14, has been recommended for the Victoria Cross. He is now with a Canadian field ambulance.——Dr. Gordon D. Atkinson, Derby Junction, N. B., has left for Serbia.——Hon. Dr. Beland, M. P., who has been a prisoner in Germany, writes a letter to Canadian friends that he is getting to be an old man, but soon expects to be released.——Dr. Alf. Haywood, assistant superintendent Toronto General Hospital, and who has been doing excellent work with the first Canadian overseas force, has been granted six weeks' leave of absence.——Lieut.-Col. Herbert A. Bruce, M.D., Toronto, who went to England a short time ago, has been appointed surgeon on the staff of the Duchess of Connaught Hospital, but will likely be sent to one of the British hospitals in France in the near future.——Dr. George D. Porter, Toronto, general secretary of the Canadian Association for the Prevention of Tuberculosis, Dr. Jabez H. Elliott, secretary of the Academy of Medicine, Toronto, Dr. William B. Thistle, Toronto, Dr. Edmund E. King, Toronto, Dr. William Oldright, Toronto, and Dr. Charles J. O'Reilly, Toronto, are absent on their summer vacation.

Hospital News.—Much uneasiness in Toronto over Canadian medical men who might possibly have been on the ill-fated *Royal Edward* when torpedoed in the Ægean Sea has been allayed by a cable from Surgeon-General Carleton Jones from England in which he states that there were no Canadians on board. The three hospital units despatched for the Dardanelles have all arrived in safety. The three units referred to are No. 1 Stationary Hospital in charge of Colonel Sanford McKee, Montreal; No. 3 Stationary Hospital, Colonel Casgrain, Windsor, Ont.; and No. 5 Stationary Hospital, Colonel Etherington, Kingston.——Hon. Dr. Pyne, Toronto, cables from England that after looking over several sites for the Ontario Government Hospital, he has chosen a site at Orpington, Kent, 15 miles from London. The hospital will contain 1,040 beds. Half may be used for convalescent patients and those suffering from shock, and half for acute cases. The hospital is under way and will be completed without delay.——Laval University, Montreal, has again offered a stationary hospital for overseas service and the offer has been accepted by the Canadian Government. The establishment calls for twelve officers, twenty-six nurses, 108 privates and fourteen other ranks. It will have half the accommodation of a general hospital, namely, 520 beds in all. Although the casualties in the Canadian Army Medical service have not been heavy, officials say there must be a continual stream of reinforcements in this branch of the service, as more men are continually being required for the new hospitals being organized in France.——The Independent Order of Odd Fellows, Ontario, has given $1,000 towards the maintenance of the Ontario Hospital in England.——Amherst, N. S., has made arrangements with the Imperial authorities for German prisoners from the internment camp there to be put to work building their new hospital. The plans adopted by the council of Amherst were prepared by one of the German prisoners who in the fatherland had charge of a large German estate. He was returning to Germany when interned in Amherst.——To commemorate the first building of the Hotel Dieu Hospital, Montreal, which originally stood on the corner of St. Paul and St. Sulpice streets, a handsome bronze tablet has been placed upon the large commercial building now occupying the spot. Upon the top of the tablet there is a bust of Jeanne Mance in bas relief form perpetuating the memory of the founder of the institution. The hospital was erected in 1644.——The Hon. W. J. Hanna, acting premier of Ontario, and administrator of the public institutions of Ontario, has fallen in with the suggestion that the Ontario Government temporarily use the new buildings of the Hospital for the Insane at Whitby, Ont., as a convalescent home for invalided soldiers. The matter was brought to the attention of the Government by the Toronto and York County Patriotic Association for whom Dr. Harry B. Anderson, Toronto, is honorary advisory physician. It is likely that a preliminary clearing hospital will be established in Toronto where cases may be examined and diagnosed.

GENERAL

Sanitary Survey.—Dr. Howard Franklin Smith, and Sanitary Engineer J. A. Craven, U. S. P. H. S., have begun a survey of the great Miami River and its tributary streams, with headquarters at Dayton.

Electro-Therapeutists Meet.—The twenty-fifth annual meeting of the American Electro-Therapeutic Association will be held in Atlantic City, N. J., September 14 to 16, under the presidency of Dr. John W. Torbett, Marlin, Texas. The headquarters of the association will be at the Hotel Chalfonte.

Escaped Leper.—The authorities at Washington, D. C., have notified the health and other authorities throughout the country of the escape from the reservation at Washington of Emil Grabell, alias C. K. Randall, a leper. He is described as being 6 feet tall and weighs 200 pounds. He is said originally to have come from St. Louis.

Public Health Officers to Meet.—The forty-third annual meeting of the American Public Health Association will be held in Rochester, N. Y., September 6 to 10, under the presidency of Dr. William P. Sedgwick, Boston. The work of the Association is divided into six sections, namely, health officers, laboratory workers, vital statisticians, sanitary engineers, those interested in industrial hygiene and social workers.

Prevention of Infant Mortality.—The American Association for the Study and Prevention of Infant Mortality will hold its sixth annual meeting in Philadelphia, November 10 to 12, with headquarters at the Hotel Bellevue-Stratford. The preliminary program shows the following subjects: Eugenics; effect of the economic standing of the family on infant mortality; infant welfare nursing in small cities, towns and rural districts; institutional mortality; midwifery conditions; and treatment and prevention of respiratory diseases.

Physician Probably Lost on Arabic.—Among those reported lost on the *Arabic* is Dr. Edmund F. Woods of Janesville, Wis. Dr. Woods was born in England, and when 6 years

of age came with his family to the United States. He took his medical course in the Indiana Medical College, Indianapolis, from which he was graduated in 1882; he also received a diploma from the Atlanta (Ga.) Medical College in 1890. Dr. Woods was a Fellow of the American Medical Association and was a surgeon of prominence of Wisconsin. He sailed for Europe on June 26, last, going directly to northern France, where he expected to do hospital work. He has practiced in Janesville about twenty-five years.

Successful Candidates for Navy Medical Reserve Corps.—At the preliminary examination July 6, 1915, in various cities of the United States, of candidates for appointment as assistant surgeons in the Medical Reserve Corps and eligible to subsequent examination and appointment in the Medical Corps of the navy after a course at the Naval Medical School, the following candidates were found physically and professionally qualified:

1. Virgil Hope Carson, M.D. (Medical College of Virginia); Intern, New York City Hospital.
2. Elphege Alfred Gendreau, M.D. (Georgetown University Medical School); Intern, Providence Hospital, Washington, D. C.
3. Francis DeArmond Gibbs, M.D. (Georgetown University Medical School); Intern, Georgetown University Hospital and Children's Hospital, Washington, D. C.
4. John Harper, M.D. (Medico-Chirurgical College of Philadelphia); Intern, Medico-Chirurgical College of Philadelphia.
5. Forrest Martin Harrison, M.D. (George Washington University); Intern, Government Hospital for the Insane, Washington, D. C.
6. Richard Hagan Miller, M.D. (Jefferson Medical College); Ph.B., 1907 (Brown University), A.M., 1909 (Brown University); Intern, Rhode Island Hospital, Providence, R. I.
7. John Paul Owen, M.D. (St. Louis University); Intern, Hospital and Health Board of Kansas City, Mo.
8. John Floyd Pruett, M.D. (Leland-Stanford University); A.B., 1909 (Leland-Stanford University); Intern, Lane Hospital, San Francisco.
9. William Jehiel Rogers, M.D. (Western Reserve University); A.B., 1911 (Adelbert College, Western Reserve University); Intern, St. Vincent's Charity Hospital.
10. George Patrick Shields, M.D. (University of Pennsylvania); Intern, Methodist Episcopal Hospital and St. Agnes Hospital, Philadelphia, Pa.
11. George Washington Taylor, M.D. (Tulane University); B.S., 1909, M. S., 1910 (Alabama Polytechnic Institute); Intern, Illinois Central R. R. Co. Hospital, New Orleans.
12. Russell John Trout, M.D. (New York University and Bellevue Hospital Medical School); Intern, Bellevue Hospital.
13. George Boyd Tyler, M.D. (Medical College of Virginia); Intern, Marine Hospital, Chicago.
14. Walter Alfred Vogelsang, M.D. (University of Tennessee); Intern, Contagious Disease Hospital, N. Y., Ernest Werde Hospital, Buffalo, N. Y., and Tuberculosis Preventorium for Children, Farmingdale, N. J.
15. Grover Cleveland Wilson, M.D. (University of Virginia).
16. Charles Henry Weber, M.D. (Marquette University); B.S. (Marquette University); Intern, National Military Home, Ind.

FOREIGN

Plague in Havana.—On August 16, a case of bubonic plague was reported at Havana, the first one to be observed since early last winter.

Cholera in Galicia.—A dispatch from Zurich of August 18 states that 670 new cases of cholera have been officially reported, the majority of which are in Galicia, and that the disease is rapidly spreading.

Swiss Guard Against Cholera.—A dispatch from Vevey says that the Canton of Neuchatel has taken measures to establish isolation hospitals and to provide special medical service against the incursion of cholera from Austria.

Alcohol in Austria.—Under a decree of June 30 Austria has prohibited the establishment and operation of new non-agricultural distilleries of alcohol which are subject to consumption tax under the laws of 1888 and 1889. The construction and operation of new alcohol refineries is also prohibited, and no enlargements may be made which would result in increased production.

Awarding of Prizes by the French Academy of Sciences.—Of the twenty prizes awarded at the recent annual meeting of the Académie des Sciences at Paris, five of the winners had fallen on the field of battle since the prize committee had agreed on the recipients. The two medical prizes went to Hallé and Gougerot for their work on chronic tuberculosis of the kidney and treatment of syphilis in private practice. One prize of $760 was given to Professor Cesaro of the University of Liége for his research on crystallography.

The "Pará-Medico."—The *Pará-Medico* is the newly founded official organ of the organized physicians of the northernmost state in Brazil, Pará, the main seat of the rubber trade. The accent in "Pará" should be on the second syllable, as in "hurrah." In Brazil the city of Pará is known generally as Belem. The first issue contains eight original articles on leprosy, chronic nephritis, malaria, etc., besides discussions on the public health in the equatorial state. A. Franca calls attention to painful hypersensibility localized in the epigastrium as a valuable diagnostic sign in acute malaria.

Drugs and Chemicals in Russia.—According to Commerce Reports Russia at the beginning of the war was in better shape with reference to drugs and chemicals than in some other respects; only those requiring technically more complicated processes could not be made in Russia. Ten chemical factories were in existence at the beginning of the war, and since then other facilities have been provided, and the stoppage of imports has developed the production of phenol, chloroform, lanolin, mercury and its salts, acetanilid, and a start has been made in the production of alkaloids. Many chemicals with trademarked names manufactured in other countries are now on sale under their chemical names.

Restrictions on Patent Medicines in Cuba and Guatemala.—The provisions of the Cuba patent medicine regulations of 1913, relating to the disclosure of patent medicine formulas, has been suspended until Sept. 10, 1917. In Guatemala the provisions of the decree of 1902 concerning the sale of patent medicines will be strictly enforced after Sept. 25, 1915. This decree provides that no pharmaceutic preparation of unknown composition shall be sold until after it has been examined and approved by the Managing Board of the Faculty of Medicine and Pharmacy. Lists will be kept at all custom houses of remedies of secret composition, the importation of which is authorized. All others will be excluded. Products and medicines imported by others than those conducting legally recognized pharmacies or similar establishments will be confiscated.

WAR NOTES

Supplies to Small French Hospitals.—A total of 255 cases of surgical dressings and other hospital supplies for small institutions in Normandy and Brittany have been shipped thus far by the New England branch of the French Wounded Emergency Fund.

Typhus in Serbia.—Dr. Samuel H. Hodge, Knoxville, Tenn., who went to Serbia in charge of a Red Cross unit last November, returned August 13. In February, Dr. Hodge contracted typhus fever and was ill for twenty-six days. In March there were 46,000 cases of the disease, but before he left Serbia the epidemic was well under control.

Tribute to Physicians in War.—Mr. Charles J. P. Lucas, Cleveland, who has recently arrived from France, pays a glowing tribute to the heroism of American physicians serving in war hospitals and in the field. There are now, he says, twenty-two American surgeons and sixty orderlies in France, stationed at Neuilly near Paris, Pagny-sur-Meuse and St. Maurice. At Pagny the physicians were under fire for a period of four months.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending August 21, 1915, lists the following contributions:

Dr. George N. Kreider, Springfield, Ill.	$ 5.00
Dr. Hugh A. Cuthbertson, Chicago	10.00
Receipts for the week ending August 21	$ 15.00
Previously reported receipts	$7,814.84
Less error*	25.00
	7,789.84
Total receipts	$7,804.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 494.80

* By oversight, Dr. Charles N. Dowd, whose check was received July 16, was credited with contribution of $25 for week of July 17 and of July 24.

F. F. Simpson, M.D. Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

PARIS LETTER

PARIS, Aug. 5, 1915.

The War

DRESSING OF WOUNDS OF WAR WITH SALINE SOLUTION

Several surgeons have reported excellent results from the treatment of wounds of war with sea water or 0.7 per cent. saline solution. Dr. E. Gley, professor at the Collège de France, has drawn the attention of the Académie de médecine to the fact that the proportion of sodium chlorid in an isotonic solution must be 0.9 per cent. Physiologists, moreover, have forsaken the wrongly named "physiologic solution" for the solution of Ringer-Locke, which includes not only sodium chlorid but also calcium chlorid, potassium chlorid and sodium bicarbonate. In surgery also it would be well to use by preference the latter solution, which is preferable to saline solution and still more to simple sterilized water. This last, on account of its harmful osmotic activity, ought to be banished from operating rooms and dressings. For nine months Dr. Gley has used Ringer-Locke solution, either plain or as a vehicle for antiseptic substances, in operations, dressings and hypodermic or intravenous injections. The results observed have included a diminution of pain, a more rapid disappearance of suppuration, and more rapid cicatrization of the wounds.

With regard to sea water, the Prince of Monaco has observed that, no matter how far from the coast or at what depth, the sea water is drawn, it is never possible to be sure that it is free from germs. Of two samples taken side by side, one will furnish cultures of microbes and the other will be found sterile. Sea water, therefore, should be sterilized before being used. Heat seems to deprive it of none of its valuable properties.

Dr. V. Wallich has read a paper before the Académie des Sciences on the elimination of suppuration in wounds of war. He has succeeded in eliminating the most serious suppurations, such as those in fractures with wounds, phlegmons of various regions and ununited stumps. In three or four days the secretions of the wound disappear and the wound itself takes on a "ham-like" appearance surrounded by a large cicatricial border. The general condition of the patient improves, although in some cases a high temperature persists, while the pulse constantly becomes less accelerated. The examination of the exudate shows an increasing vitality of the leukocytes and a diminution of germs. At last the germs disappear; there remain only healthy leukocytes and proliferating corpuscles. These results are obtained by doing away with drains as soon as possible; the wound is bathed at the outset with a saline solution which has been boiled for a quarter of an hour and which contains a soupspoonful of sodium chlorid per liter. The surface of the wound is covered with little gauze compresses boiled in the same solution. The asepsis should be complete; the operation of dressing, like a bacteriologic manipulation, should be performed with sterilized instruments, the dressing materials being untouched by the hands, which are difficult to keep aseptic during the course of a series of dressings.

LESIONS OF THE MEDIAN NERVE OF THE FOREARM IN LIGHT WOUNDS BY PROJECTILES

At a recent session of the Société de chirurgie de Paris, Dr. Hardouin of Nantes called attention to the great frequency of lesions of the median nerve in the forearm in light wounds by projectiles. These lesions seldom become manifest until after the cicatrization of the wound. The patient complains that movements of the hand and wrist, whether spontaneous or passive, continue to be painful even though there is no articular stiffness present. A characteristic sign is that pain, provoked by exaggerated movements, is present near the anterior cicatrix of the forearm and a little below it, but not in the articulations of the fingers and the hand, as in cases of arthritis and synovitis. When the lesion of the median nerve has not been recognized these cases drag on indefinitely, no result being obtained from any mechanotherapeutic or electrotherapeutic measures. The patients make very good recoveries, on the contrary, when they receive the exclusively surgical treatment adapted to their condition. The median nerve must be liberated from the intimate adhesions which bind it to the neighboring muscles and tendons. The operation is simple, but it is necessary to try to avoid formation of new adhesions. To prevent this, Hardouin has for six months employed a very simple procedure which has given full satisfaction. The nerve, once dissected free, is completely and carefully wrapped (but not so tightly as to cause compression), with a strand of catgut carefully applied along the entire affected zone. The catgut, during the time it is being absorbed, protects the nerve and permits the neighboring tissues to become cicatrized without forming new adhesions. After this procedure, pains disappear rapidly and the function of the hand is notably improved in most cases.

TREATMENT OF SYPHILITIC COMPLICATIONS IN SOLDIERS BY SHORT INTENSIVE COURSES OF ARSENIC AND MERCURY

At present there is an object in treating syphilitic soldiers energetically and rapidly in order to return them to the army as soon as possible. For this purpose Drs. Dalimier and Debat have adopted a method which they have just reported to the Académie de médecine and which consists in a combination of injections of salvarsan with Jacquet's "plurimercurial" treatment: three or four moderate arsenical injections given six days apart with daily absorption of 0.1 gm. of mercurous iodid in the form of pills, 0.01 gm. of mercuric iodid in intramuscular injection and inunction of 2 gm. of Neapolitan ointment [about the same as our mercurial ointment U. S. P.—ED.].

By this method about 80 per cent. of the patients may be returned to the ranks in three weeks. Used with care on subjects thoroughly examined beforehand, it is not dangerous and is tolerated perfectly.

THE SANITATION OF BATTLEFIELDS

In the present war, in which the battle fronts extend in France and Belgium alone over more than 600 kilometers (about 375 miles), the question of the sanitation of battlefields has a special importance. It was recently discussed by the Conseil supérieur d'hygiène publique de France (THE JOURNAL, May 22, 1915, p. 1777). In general, the use of chemical agents and spray applications (coal tar, phenol, ferrous sulphate, zinc sulphate, chlorinated lime, etc.), is recommended. These chemical agents, however, are rather expensive and it is not always possible to obtain them. It is therefore of interest to recall that in 1871 the Conseil d'hygiène publique recommended and applied with success an altogether different method, based on the power possessed by vegetable growths of absorbing and transforming decaying animal substances. By this method bodies are left where they fall, but covered with a layer of earth no thicker than 40 or 50 cm. (about 15 or 20 inches). It is necessary, however, to take care to bring the earth for the mound from a distance of 1 or 2 meters (about 1 or 2 yards), in order not to disturb the soil impregnated with liquids of decomposition and to avoid forming trenches at the side which would dry the mound too rapidly. The mound is then planted with grains and plants which grow rapidly and which are especially avid of nitrogen or the products of decomposition. Among the best for this use are the *Helianthus annuus* or common sunflower and the *Balsamita suaveolens*, otherwise known as the *Chrysanthemum balsamita* or balsam herb, whose assimilative powers are remarkable. Other plants which are very greedy for nitrogen may be employed, such as the *Galega officinalis* or goat's rue, the *Helianthus tuberosus* or Jerusalem artichoke, the *Sinapis arvensis* or wild mustard, and some forage plants.

THE AMERICAN RELIEF

The general committee of the American Relief Clearing House has met at the seat of the organization, rue François-1-er, 1, under the chairmanship of Mr. H. Herman Harjes. The financial report shows that up to the present it has received 199,711 francs (about $39,942), while the various organizations of which it is the center have received 1,009,565 francs (about $201,913). The chairman mentioned that donations, whether in shape of money or of supplies, are addressed directly to the invaded provinces through the Belgian relief commission (Hoover Commission) and that the Rockefeller foundation and the American Red Cross are supporting an important sanitary mission in Serbia. Mr. Harjes expressed the gratitude of the committee toward the French government and its officials, who have given every facility for the transportation of donations from America. These have amounted already to 7,000 cases, 2,786 of which have been received in June alone.

THE ACADEMY OF MEDICINE AND THE WAR

Ordinarily the Académie de médecine holds no sessions from the end of July to the beginning of October. Because of the present condition of affairs it has decided to continue holding public sessions during August and September.

Marriages

VAN ARSDLE BLAKSLEE, M.D., Midland, Ont., to Miss Margaret Newbold of Manhasset, L. I., N. Y., August 10.

CHARLES E. PORTER, M.D., Menlo, Iowa, to Miss Minnie Leone Wilson, of Pomona, Cal., August 4.

LOUIS BIRSNER, M.D., Belleville, Ill., to Miss Gertrude Hinch of Ste. Genevieve, Mo., August 15.

WILLARD WOODARD DICKER, M.D., to Miss Mary C. Wright, both of Oak Park, Ill., August 14.

LAWRENCE CONTESSA, M.D., to Miss Angelina Ruffolo, both of New York City, August 18.

JAMES CRAIG NEEL, M.D., to Miss Nellie Clarke Glascock, both of Baltimore, August 17.

HENRY WOLFFE BOWERS, M.D., to Miss Grace Borgen, both of Nevada, Iowa, August 15.

JAMES J. WALSH, M.D., to Miss Julia Hulet Freed, both of New York City, August 14.

CHARLES P. KENNEDY, M.D., to Miss Nora Bess Ely, both of Cincinnati, August 14.

CHARLES T. FOO, M.D., St. Johns, Mich., to Miss Rose Woo of Detroit, recently.

ELTON A. CHLOUPEK, M.D., to Miss Emma Shaw, both of Chicago, recently.

Deaths

Paul Ehrlich. Prof. Paul Ehrlich, one of the most celebrated scientists of modern years, died in Berlin, August 20, of heart disease. Dr. Ehrlich was born in Strehlen in the Province of Silesia, March 14, 1854. His early education was received in Breslau, and later he studied medicine at Breslau, Strassburg, Freiburg and Leipzig. He received his degree in medicine in 1878. From 1878 to 1885 he was assistant in the clinic of v. Frerichs at Strassburg; from 1885 to 1889 assistant in the medical clinic of Gerhardt; and in 1889 he became privatdozent in the medical faculty of Berlin. He became assistant in the Institute for Infectious Diseases under Koch in 1890, and was made professor in 1891. In 1896 he became director of the Institute for Serum Study in Steglitz near Berlin. He was made director of the Royal Institute for Experimental Therapy, a German government institute at Frankfort, in 1899. In 1906 Mrs. Georg Speyer endowed an institute for the study of chemical therapeutics for Dr. Ehrlich. The Georg Speyer-Haus was built next to the Royal Institute for Experimental Therapy. At that time also Dr. Ehrlich received a grant of $10,000 from the Rockefeller Institute. In 1904 Dr. Ehrlich visited the United States and lectured in various cities, receiving the degree of LL.D. from the University of Chicago; in 1907 he delivered the Harben lectures in London, receiving the degree of Doctor of Science from the University of Oxford; in 1908 he received one half of the Nobel Prize for Research in Immunity, the prize being equally divided between Drs. Ehrlich and Metchnikoff, and in 1914 he was decorated with the Insignia of the Red Eagle by Emperor William XII. He was also the recipient of the grand cross of the Orden Civil de Alfonso conferred by the king of Spain.

Ehrlich's early publications were on the study of the blood cells and its constituents. He also did fundamental work in the standardization of diphtheria antitoxin, working with von Behring. A number of experiments with synthetic products resulted in the production of atoxyl; in 1910 salvarsan, and later neosalvarsan. Simultaneous with these studies he developed the side-chain theory. More recently Professor Ehrlich had been concerned with remedies for cancer.

Last year the sixtieth birthday of Professor Ehrlich was celebrated in Berlin. At that time our foreign correspondent stated that although it was customary to celebrate the seventieth birthday as the occasion of public honor, the occurrence of the sixtieth birthdays of two great scientists, Drs. Ehrlich and Behring, one on the 14th, the other on the 15th of March, made an early celebration seem particularly appropriate. Great honor was done to these two discoverers at that time.

Carlos John Finlay who first suggested the theory of the propagation of yellow fever by means of the mosquito, died at his home in Havana, Cuba, August 20, aged 81.

He was born in Puerto Principe, Cuba, Dec. 3, 1833, the son of Dr. Edward and Isabel de Barrès Finlay. He received his preliminary education in Rouen, France, and then entered Jefferson Medical College, Philadelphia, from which he was graduated in 1865. Dr. Finlay began practice in Havana. He was the delegate from Cuba to the International Sanitary Conference in Washington in 1881, and in that year, on August 14 before the Royal Academy of Medicine, Havana, promulgated his theory that an insect, the mosquito, was the means whereby yellow fever was conveyed from person to person. His articles in support of this theory appeared in the *American Journal of the Medical Sciences* for October, 1886; he reported that he had "obtained a well-marked attack of yellow fever following a bite by a contaminated mosquito." He published another article on the subject of mosquito transmission of yellow fever, in 1894, in the *Edinburgh Medical Journal* and five years later a third article in the *Medical Record*, in which he outlined in detail how yellow fever cases should be handled and screened, proposed the destruction of mosquito larvæ and discussed prophylaxis treatment and general sanitary control.

Dr. Finlay's theory was not regarded seriously, but he persisted.

After the withdrawal of the United States troops from Cuba, in 1902, Dr. Finlay succeeded Dr. Gorgas as chief health officer of Cuba and later was retired on a pension by the Cuban government. Since January, 1909, he had been the honorary president of the Junta Nacional de Sanidad y Beneficencia and editor of its official organ. He was also a member of many learned societies. Dr. Finlay was an enthusiast, thoughtful and kindly. He lacked the genius for self-exploitation and having established his doctrine, modestly lived on with no thought of further recognition.

Dr. Edmund Blackett Owen, M.B., F.R.C.S., 1872; surgeon-in-chief of the St. John Ambulance Brigade, died in London, July 23, from cerebral hemorrhage, aged 68. The death of Dr. Owen was probably hastened by his devotion to the wounded. When the Epsom Hospital for the Wounded first opened, Dr. Owen operated the first night from eleven o'clock until four in the morning, beginning again immediately after breakfast and for some time thereafter he had been working very strenuously in connection with the Red Cross. Dr. Owen had been senior vice-president of the Royal College of Surgeons and chairman of the council of the British Medical Association. He had received honorary degrees from the universities of Aberdeen and Sheffield; was a Chevalier of the Legion of Honor of France, and had written several medical treatises, notably the article on surgery in the Encyclopedia Britannica.

Horatio Nelson Spencer, M.D. College of Physicians and Surgeons in the city of New York, 1869; a member of the Missouri State Medical Association; aged 73; founder of the *American Journal of Otology* and editor of the journal for four years; a member of the American Otological Society; a Confederate veteran; professor of diseases of the ear in the medical department of Washington University, St. Louis, and consulting aural surgeon to the Martha Parsons Free Hospital for Children, St. Louis; died at Galen Hall, Atlantic City, N. J., August 7, from typhoid fever.

Florence Huson, M.D. University of Michigan, Ann Arbor, 1885; a Fellow of the American Medical Association; attending obstetrician and chief of staff of the Detroit Women's Hospital and Infants' Home; founder of the Free Dispensary for Women and Children, Detroit; founder, and for several years president of the Blackwell Medical Society and once vice-president of the Michigan State Medical Society; died at her home in Detroit, August 13, from cerebral hemorrhage.

John O'Malley, M.D. Jefferson Medical College, 1884; a member of the Medical Society of the State of Pennsylvania; aged 59; physician to the St. Joseph's Home and Maternity Hospital, Scranton, Pa.; for many years health officer of Scranton and for three terms a member of the local school board; died at his home in Scranton, August 6, from cholera morbus.

Arthur Alston Morrison, M.D. Medical College of the State of South Carolina, Charleston, 1894; aged 44; formerly a Fellow of the American Medical Association; a member of the Medical Association of Georgia; assistant surgeon of the First Infantry, Georgia National Guard;

attending physician to the Hoover Home and Bethesda Orphan's Home, Savannah, Ga., died at his home in Savannah, August 6.

Edelbert U. Eaton, M.D. University of Buffalo, 1884; aged 70; a member of the Medical Society of the State of Pennsylvania; first president of the Potter County Medical Society, formerly a member of the Pennsylvania legislature and for seventeen years postmaster of Ulysses, Pa., died at his home at that place May 25, from cerebral hemorrhage.

John Jacob Bissett, M.D. College of Physicians and Surgeons in the city of New York, 1880; aged 79; a member of the Medical Society of the state of Pennsylvania and Medical Society of New Jersey; an officer of the United States Navy retired as lieutenant commander; of Coraopolis, Pa., died in Bridgeport, Conn., July 20, from cerebral hemorrhage.

John Kendrick Gilmore, M.D. Detroit College of Medicine, 1892; a member of the Medical Society of the State of Pennsylvania, and formerly president of the Clinton County Medical Society; borough physician and formerly president of the Renovo, Pa., board of health, died at his home in Renovo, about August 5, aged 56.

Ammi Ward Follett, M.D. Dartmouth Medical School, Hanover, N. H., 1882; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; a practitioner of Somerville, Mass., since 1888; died at his home in that place, August 16, aged 57.

Neal Walter Culbertson, M.D. Rush Medical College, 1896; aged 44; a Fellow of the American Medical Association; local surgeon to the Pennsylvania, Baltimore and Ohio, and Wabash systems at Massillon, Ohio, died at his home in Massillon, August 7, from endocarditis.

William Emil Klokke, M.D. College of Physicians and Surgeons, Chicago, 1899; a member of the Missouri State Medical Association; of St. Louis; a specialist on diseases of the eye, ear, nose and throat; died in Tampa, Fla., August 8, from meningitis, aged 39.

George Kerr, M.D. University of Pennsylvania, Philadelphia, 1864; aged 74; of Pierson, Fla.; a Fellow of the American Medical Association; surgeon of volunteers during the Civil War, died at his summer home in Lavalette, N. J., August 12.

Arthur Thomas Hills, M.D. New York Homeopathic Medical College, New York City, 1875; aged 65; of New York City and Nyack, N. Y.; a Fellow of the American Medical Association; died in a hospital in Nashua, N. H., August 7, from nephritis.

Jeanne de la Montaigne Lozier, M.D. New York Medical Hospital College for Women, New York City, 1878; aged 74; at one time a member of the faculty of her alma mater; died at her home in New Brighton, Staten Island, August 6, from heart disease.

George William Hackett, M.D. University of Buffalo, 1895; of Ceres, N. Y.; a Fellow of the American Medical Association; was caught beneath his overturned automobile and instantly killed near Shingle House, N. Y., August 11.

John Ambrose Kenney, M.D. University of Pennsylvania, Philadelphia, 1909; a Fellow of the American Medical Association; aged 40; a specialist on diseases of the eye, ear, nose and throat, died at his home in Wilkes-Barre, Pa., August 9.

Wilbur James Boyden, M.D. Long Island College Hospital, Brooklyn, 1872; aged 64; for many years a practitioner of Muncie, Ind., and later a patient in the East Haven State Hospital; died at his home in Wayne County, Ind., about August 3.

Garland E. Huddle, M.D. Baltimore University, 1892; aged 44; a member of the Kentucky State Medical Association; for several years health officer of Bowling Green, Ky.; died at his home in Bowling Green, Ky., August 3, from nephritis.

Samuel Thomas Roman, M.D. University of Pennsylvania, Philadelphia, 1865; aged 75; a Fellow of the American Medical Association; assistant surgeon of volunteers during the Civil War; died at his home near Conowingo, Md., August 4.

William Jamison McClement Cunningham, M.D. Rush Medical College, 1904; of Chicago; a member of the Illinois State Medical Society and Chicago Dermatological Society; died in the Presbyterian Hospital, Chicago, August 13.

Robert V. Mobley, M.D. University of Alabama, Mobile, 1889; aged 49; of Birmingham, Ala.; a member of the Medical Association of the State of Alabama; died in an infirmary in Birmingham, August 4, from tumor of the brain.

Elmer L. Styles, M.D. Homeopathic Hospital College, Cleveland, 1881; aged 68; a veteran of the Civil War; of New Britain, Conn.; while driving his automobile in Newington, Conn., August 3, died suddenly from heart disease.

George W. Arbuckle, M.D. Hahnemann Medical College, Chicago, 1881; aged 69; formerly coroner of Cuyahoga County, Ohio, and for many years a resident of Cleveland; died at his home in Novelty, Ohio, July 29.

Adelbert De Loss Lowell, M.D. Rush Medical College, 1889; a Fellow of the American Medical Association; aged 52; for twenty-nine years a practitioner of Rogers Park, Chicago, died August 14, from appendicitis.

David LeRoy Merriman, M.D. Hahnemann Medical College, Philadelphia, 1894; aged 50; a member of the Medical Society of the State of Pennsylvania; died at his home in Arendtsville, Pa., August 15, from uremia.

Marvin B. Grace, M.D. Texas Medical College, Galveston, 1891; aged 47; a Fellow of the American Medical Association and a well-known practitioner of Seguin, Tex.; died at a hospital in Houston, Tex., July 27.

John Charles Maloney, M.D. Yale University, New Haven, Conn., 1910; aged 29; a member of the Medical Society of the State of New York; died at his home in Dundee, N. Y., August 1, from valvular heart disease.

Paul Emile Arthur Du Milieu, M.D. Faculty of Medicine of Bordeaux, France, 1878; Cooper Medical College, San Francisco, 1886; aged 63; was found dead in his home in Nevada City, Calif., August 7.

Lauchie Q. Thornberry, M.D. University of Louisville, Ky., 1907; aged 38; of Mouthcard, Ky.; who was shot and seriously wounded, July 21, in a quarrel, died in a hospital in Huntington, W. Va., July 31.

John Gilmer Minor, M.D. Jefferson Medical College, 1854; aged 84; for more than half a century a practitioner of Rockingham County, Va.; died at his home in Bridgewater, Va., about August 3.

Lester H. Painter, M.D. College of Medicine and Surgery, Physio-Medical, Chicago, 1898; aged 44; of Dallas, Tex.; died at the home of his sister in Muncie, Ind., August 1, from heart disease.

John R. Vandenberg, M.D. Grand Rapids (Mich.) Medical College, 1902; aged 36; of Grand Rapids, Mich.; was killed, August 2, in a collision between automobiles on the Robinson road.

Michael J. S. Cook, M.D. Detroit Homeopathic College, 1872; aged 79; for nearly thirty-five years a practitioner of Harbor Springs, Mich.; died at his home in that place, July 25.

Richard H. Hightower, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1890; aged 55; died at his home in Stockbridge, Ga., July 22, from cerebral hemorrhage.

George H. Riley, M.D. Rush Medical College, 1875; aged 59; of Toledo, Ohio; died at the home of his sister in Chicago, August 3, from carcinoma of the stomach.

John Wilbur MacCammon, M.D. Medical College of Indiana, Indianapolis, 1902; aged 38; died at his home in Indianapolis, August 7, from tuberculosis.

Mary Louise Ambrook, M.D. University of Michigan, Ann Arbor, 1891; aged 65; died at her home in Boulder, Colo., August 4, from heart disease.

Benjamin J. Smith, M.D. Bellevue Hospital Medical College, 1873; aged 69; died at his home in Vanceboro, N. C., May 29, from acute colitis.

James Malcolm Thompson, M.D. Chicago College of Medicine and Surgery, 1910; aged 35; died at his home in San Francisco, August 5.

Clara Emma Watson, M.D. Eclectic Medical College of the City of New York, 1895; aged 54; died at her home in Brooklyn, July 31.

Reuben F. Berry, M.D. Beaumont Hospital Medical College, St. Louis, 1888; aged 69; died at his home in Lancaster, Ohio, July 31.

Osmer Irvin Reasoner, M.D. Kentucky School of Medicine, Louisville, 1876; aged 62; died at his home in Muncie, Ind., August 9.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

FORMAMINT

Report of the Council on Pharmacy and Chemistry

The following report has been authorized for publication.

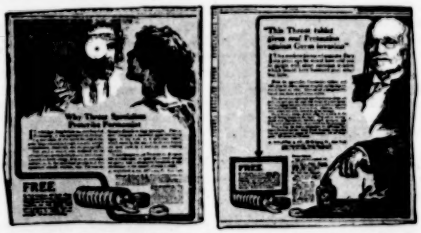
W. A. PUCKNER, Secretary.

Formamint is a proprietary medicine manufactured by the A. Wulfing Company (New York, London and Berlin), which is affiliated with the Bauer Chemical Company.

It has been widely advertised in Europe for several years, and is now on the American market;[1] it is advertised in this country both in newspapers and medical journals.

Following is a brief review of the more important alleged investigations that have been reported from time to time in various European journals.

In "The Therapeutical Value of Formamint in Septic Affections of the Oro-Pharynx," De Santi[2] quotes Rosenberg,[3] who reports the successful use of Formamint in cases of streptococcus infections, tonsillitis and acute symptoms of chronic sore throat. According to Seifert[4] Formamint is a chemical combination of formaldehyd and milk sugar. When the tablets are dissolved in the saliva, 0.01 per cent. of formaldehyd in its "status nascendi" is liberated and exercises a strong disinfectant action. Seifert states that the preparation is markedly palatable, since it contains a little citric acid to render the taste cool and refreshing. In some experiments with streptococci, pneumococci, typhoid and diphtheria bacilli, Seifert found that a solution of one tablet in 10 c.c. of water destroyed these germs in from five to ten minutes. A solution of the same strength was also added to culture tubes of broth, agar, and gelatin, with the result that no growth occurred in them, while distinct and characteristic development of the bacteria took place in control tubes. He does not state, however, how much Formamint solution was added to the mediums.



How the exploiters of Formamint capitalize the medical profession. Miniature reproductions of typical Formamint advertisements appearing in the newspapers.

Daus[5] reports successful treatment of tonsillitis, mumps and middle ear diseases. In these cases no other gargles or mouth washes were used. He states that no indication of irritant or other injurious action made its appearance even after large doses. In the same article F. Levy reports experiments as follows: Agar plates were prepared with a culture of streptococcus from a severe case of quinsy. One half of the plate was rubbed with saliva containing Formamint in solution. (The strength of the solution used is not given.) In twenty-four hours streaks of growth had appeared on one portion of the plates while the part on which the Formamint saliva had been rubbed remained sterile. Daus also found that agar and broth cultures of streptococcus shaken with Formamint saliva remained sterile.

Rheinboldt,[6] investigating the effects of Formamint and of ordinary formaldehyd on animals, concludes that formaldehyd is toxic in action while Formamint is not.

Rosenberg[7] corroborates this statement. He also found that agar plates of *Bacillus prodigiosus* were killed by Formamint solutions in about four hours. He fails, however, to give the strength of his Formamint solutions.

Wingrave[8] suggests the use of Formamint for infants! He recommends that a tablet be crushed and wrapped in "butter cloth." The ends of the cloth are to be tied with thread, the Formamint is to be moistened, and the packet is to be held in the mouth of the baby several times each day.

Young[9] published the results of some experiments by himself and Delépine on the human throat. They dissolved a tablet in the mouth and made swab cultures with the following results:

Immediately after taking the tablet....	0 colonies
10 minutes after taking the tablet....	35 colonies
30 minutes after taking the tablet....	150 colonies

They found no staphylococci at any time. Other results of swabbing various parts of the throat before and after the use of Formamint, reported by these investigators, show enormous reductions in the count, claimed to be due to the action of Formamint. The count was made on agar at 37 C., but they fail to state the time elapsing between taking the Formamint and making the swab. Young also reports favorable clinical results in cases of scarlet fever, diphtheria, sore throat, and the like. It must be noted, however, that they state that the mouth and fauces must first be thoroughly cleansed by swabbing and douching before Formamint is used.

THE "CHEMICAL COMPOUND" CLAIM

The claims made in the advertising literature of Formamint are very extravagant. Many are highly improbable. These statements will be discussed later.

The statement is made that Formamint is a new chemical compound:

"Formamint is Pentamethanallactose, 5 $CHOH+C_{12}H_{22}O_{11}$. It is an original combination of Formaldehyde with Lactose, a definite chemical compound. The Formaldehyde molecule is locked up in it until solution in the saliva takes place, when the Formaldehyde is liberated in its *nascent* state and is therefore active without being irritant."

Furthermore the makers contend that this new chemical compound is entirely harmless. For example Daus,[5] in an article on "The Disinfectant Action of Formic Aldehyde on Mucous Membranes," declares:

"No indication of irritant or other injurious action made its appearance even after large doses. The urine remained free from albumin and sugar."

Such statements as these are found in the advertising literature:

"Formamint tablets are absolutely harmless and innocuous, even to little children."

"When dissolved in the saliva, Formamint Tablets liberate slowly Nascent Formaldehyde in a most active yet non-irritant form."

They maintain that Formamint is not only absolutely harmless, but actually beneficial to the tissues. It may be used "to tone up and strengthen the tissues, prevent hoarseness, and allay irritation in singers, public speakers," etc.

The claims urged as to its germicidal power are indeed glittering. This "new chemical compound" is claimed to liberate formaldehyd in some new and peculiar condition which, while it has a soothing and tonic effect on the cells of the human tissues, can at the same time quickly kill any form of bacterial life.

1. THE JOURNAL A. M. A., Feb. 24, 1912, p. 572.
2. De Santi: Medical Magazine, 1907, xvi, 141.
3. Rosenberg: Lancet, London, 1905, ii, 1871.
4. Seifert: Pharmakol. u. therap. Rundschau, 1904, No. 14; quoted by De Santi (Note 2).
5. Daus: Med. Klin., 1906, ii, 410.
6. Rheinboldt: Deutsch. med. Wchnschr., 1906, xxxii, 587.
7. Rosenberg: Therap. d. Gegen., 1905, vii, 55.
8. Wingrave: Lancet, London, 1906, ii, 1067.
9. Young: Lancet, London, 1908, i, 973.

"Dissolving readily it releases its germicidal, antiseptic qualities, which impregnate the saliva and are carried naturally and easily around the mouth and in the deepest crevices of the throat — destroying the germs where they are causing the mischief. Formamint prevents and destroys infectious germ life in a soothing grateful way."

"In the saliva it frees a germicide, fatal to germs but harmless to the most delicate membranes. And flowing into every tiny corner of the gums, tonsils and throat, into places where no gargle ever reaches, it most effectively *disinfects* the throat."

The claims as to the preventive and curative effects of the preparation cover a large portion of the category of human ailments and distresses. The following quotations indicate some of its supposed properties:

". . . it is therefore self-evident that Formamint should be looked upon as a necessary part of the treatment of all forms of tonsillitis."

"The value of Formamint is equally great in diphtheric tonsillitis, or as a prophylactic . . ."

"The extraordinary success which I had with Formamint in a school epidemic of scarlet fever during May and June, 1907, was the determining factor which induced me to abandon the use of inhalations, gargles, local applications in the treatment of diseases of the throat, and to use Formamint exclusively for the future."

"There are naturally many similar conditions in which Formamint may be used as a prophylactic, notably scarlet fever, mumps, streptococcal and staphylococcal sore throats, 'milk outbreaks' of sore throat, drain throats, hospital throats, and the like."

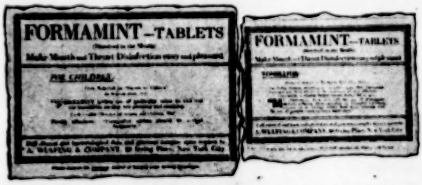
"Formamint Tablets are indicated in Angina, Tonsillitis, Pharyngitis, Stomatitis, Gingivitis, Glossitis, ulceration, spongy or bleeding gums, Pyorrhoea Alveolaris, 'Smoker's Sore Throat,' Abscess or Boils, etc."

"As a *Prophylactic* against Diphtheria, Scarlet Fever, Influenza, Measles, Epidemic Poliomyelitis, and other pathogenic micro-organisms. To neutralize putrefaction products in and about the teeth, correct fermentative processes, deodorize and purify the breath, etc."

"To *tone up*, and *strengthen* the tissues, prevent *hoarseness*, and *allay irritation* in singers, public speakers, neutralize the effects of dust-infection or *disinfect the saliva or sputum* in Influenza, Tuberculosis, etc."

One man declares that along with specific constitutional treatment he "had the best results from the use of Formamint tablets" in a case of syphilitic ulceration of the tongue.

In short, Formamint is recommended for the treatment or prevention of almost everything from a bad breath, to such grave conditions as scarlet fever, diphtheria and tuberculosis, conditions in which a delay in proper treatment—for instance, a failure to administer in diphtheria, antitoxin, may result in the death of the patient.



Two Formamint advertisements reproduced in miniature typical of those appearing in a certain type of medical journals.

A series of investigations was therefore undertaken in order to discover whether the extravagant claims regarding the germicidal power of Formamint could be verified.

Experimental Data

Two fifty-cent bottles of Wulfing's Formamint were purchased in the open market and were kept well stoppered to prevent deterioration.

Qualitative tests showed the presence of formaldehyd and the amount was determined quantitatively by the hydrogen peroxid method as given by Sutton.[10] The results were respectively, 1.99 per cent. and 2.03 per cent. of formaldehyd.

Some determinations were made of the germicidal power of Formamint in vitro, that is, under controlled laboratory conditions. A twenty-four-hour plain agar culture of *Staphylococcus aureus* was washed off in 10 c.c. of sterile 0.85 per cent. sodium chlorid solution. A 1:100,000 dilution of this was made in each of three flasks containing 100 c.c. of sterile saliva. Flask 1 contained 1 per cent. of Formamint, Flask 2, 5 per cent.; Flask 3, containing no Formamint, was kept as a control. At intervals samples were removed and dilutions made and plated in duplicate on standard agar. The plates were incubated twenty-four hours at 37 C., and plates containing less than 200 colonies were counted. The results are given in Table 1. After seven days there was no appreciable difference in the plates.

10. Sutton: Volumetric Analysis, Edition 10, p. 390.

Another test was made by adding a 1 per cent. Formamint solution to plain agar plates inoculated with *B. coli*. A twenty-four-hour plain agar culture of *B. coli* was washed off in 10 c.c. of sterile 0.85 per cent. sodium chlorid solution. A 1:1,000,000 dilution was made of this and 1 c.c. added to each plate. Varying amounts of the 1 per cent. solution of Formamint were added to each plate. They were incubated seventy-two hours at 37 C. After seven days' incubation the count was the same. The results are given in Table 2.

TABLE 1.—SHOWING TIME IN WHICH CULTURES OF STAPHYLOCOCCUS AUREUS WERE KILLED BY DIFFERENT AMOUNTS OF FORMAMINT

Amount of Formamint in Saliva (Per cent.)	Period of Standing at 37 C. (Hours)	Average Count When Plated	Count on Flask of Saliva without Formamint
1	3	32	3200
1	6	0	7000
5	1	Few	5000
5	2	0	4100
5	3	0	3200*
5	6	0	7000*

* The last two observations were made at the same time as on the 1 per cent. solutions.

Another experiment was made thus: One loopful of a twenty-four-hour plain agar culture of *Streptococcus lacticus* was mixed with a tube of North medium. One loopful from the inoculated tube was mixed with a second tube of North medium. Both tubes were poured into Petri dishes and allowed to cool. One half of each plate was well smeared with a 10 per cent. solution of Formamint in saliva. After twenty-four hours' incubation at 37 C., only a few colonies appeared on the side to which the Formamint had been applied, while the other half was thickly covered with colonies.

This work so far corroborates that reported in the literature quoted by the manufacturers. But the fact that a compound is a germicide when brought into intimate contact with bacteria in a solution or medium in a test tube or flask does not prove that it will be effective when used in the human throat.

THE ALLEGED GERMICIDAL ACTION

An attempt was made to discover whether or not the claims advanced by the manufacturers as to the perfect germicidal action of Formamint in all the nooks and crannies of the mouth and throat could be confirmed.

TABLE 2.—COUNT OF B. COLI CULTURES WITH DIFFERENT AMOUNTS OF FORMAMINT

No. c.c. of 1 per cent. Formamint	0	0.1	0.3	0.5	0.7	1.0	1.5	2.0	3.0
Count	160	33	39	26	15	12	2	0	0

The first step in attacking this problem was to make comparative counts of the number of bacteria in the throat before and after the use of Formamint. The methods employed were as follows: The throat was gargled with 50 c.c. of sterile 0.85 per cent. sodium chlorid solution. In each case the same length of time, as far as possible, was used in the process. The liquid was collected in a sterile flask. The gargling in a series of experiments was begun not less than two hours after a meal. After some preliminary work the following dilutions of the 50 c.c. of salt solution were found sufficient: 1:1,000, 1:10,000 and 1:100,000. Plates were made in duplicate from each dilution and incubated seventy-two hours at 37 C. The counts were made on plates containing less than 200 colonies. Except where

otherwise noted standard agar was used. The mediums were always prepared in the same way.

All the work was carried out under conditions as nearly natural as possible. The Formamint was taken according to the directions accompanying the trade package. Every opportunity was given the Formamint to penetrate all the crypts and recesses about the mouth and throat. The tablet was allowed to dissolve as slowly as possible, the time usually being five to six minutes, and saliva was thoroughly forced around the mouth before being swallowed. Plating was always done immediately after gargling so that no growth could occur in the salt solution. The results are given in Table 3. The numbers are average counts from several plates and calculated to show the number of bacteria washed out by the 50 c.c. of salt solution.

Finally a determination was made of the number of streptococci in the throat before and after the use of Formamint. The throat was gargled in the manner previously described. The streptococcus count was made by the dilution method as given by Heinemann.[11] Culture tubes were used instead of fermentation tubes. One per cent. dextrose broth was the medium employed. One cubic centimeter was added to each of a series of ten tubes for each dilution and the following dilutions were used: 1:10,000, 1:100,000 and 1:1,000,000.

The results given in Table 4 are the average count from a number of dilutions and are reported as the total number washed out by the 50 c.c. of salt solution.

TABLE 3.—SHOWING THAT FORMAMINT DOES NOT GREATLY DECREASE THE NUMBER OF BACTERIA IN THE THROAT

Conditions of Test	Time Since Preceding Test	Amount of Formamint Used	No. Found in Throat Before Use of Formamint	No. Found in Throat After Use of Formamint
Normal	.....	0	15,600,000	.....
Normal	1 hour	0	38,500,000	.....
Normal	1 hour	0	30,500,000	.....
Normal	.....	0	12,500,000	.....
Normal	1 hour	0	14,500,000	.....
	1 hour	0	23,500,000	.....
Tablet dissolved in mouth and throat gargled one hour later	6 days	1 tablet	.....	15,000,000
Throat again gargled two hours after Formamint was used	1 hour	0	.....	10,050,000
Normal	7 days	0	62,000,000	.....
Normal	1 hour	0	72,500,000	.....
Normal	.....	.....	61,000,000	.....
Tablets were taken, one per hour, and throat gargled one hour after last tablet was taken.	2 days	12	.....	39,100,000
Throat was again gargled two hours after taking last tablet	1 hour	0	.....	59,000,000
Normal	5 days	0	35,000,000	.....
Normal	1 hour	0	62,000,000	.....
Normal	1 hour	0	72,000,000	.....
One tablet was taken each half hour for twelve hours consecutively. Throat was gargled one hour after last tablet was taken.	4 days	24 tablets	.....	175,000,000
Throat was again gargled two hours after last tablet was taken	1 hour	0	.....	168,750,000
Normal	3 days	0	129,000,000	.....
Normal	1 hour	0	177,000,000	.....
Normal	1 hour	0	147,000,000	.....
Normal	3 days	0	79,000,000	.....
One tablet was taken immediately after preceding gargle. Throat was again gargled at end of one hour.	1 hour	1	.....	83,200,000
Throat was again gargled two hours after tablet was taken	1 hour	0	.....	134,750,000
Normal conditions except that mouth and teeth were thoroughly washed with soap just before gargling.	19 days	0	32,600,000	.....
Same as above	1 hour	0	33,125,000	.....
Same as above	1 hour	0	40,375,000	.....
Teeth were not washed. Otherwise normal conditions	2 days	0	33,500,000	.....
Same as above	1 hour	0	43,330,000	.....
Same as above	1 hour	0	54,000,000	.....
Same as above	1 hour	0	50,000,000	.....
Same as above	1 hour	0	67,000,000	.....
Mouth and teeth thoroughly washed with soap just before throat was gargled.	2 days	0	5,270,000	.....
Same as above	1 hour	0	10,916,000	.....
Same as above	1 hour	0	8,275,000	.....
Normal conditions, but 1 c.c. of sterile rabbit's blood was added to each plate.	3 days	0	228,750,000	.....
Count from the same gargle as above. No blood used in the plates	0	0	60,625,000	.....
Normal conditions, but count was made on blood agar	1 hour	0	431,250,000	.....
Count from the same gargle as above. No blood used in the plates	0	0	59,625,000	.....
Normal conditions, count was made on blood agar	2 days	0	683,300,000	.....
Same gargle as above, but count was made on plain agar	0	0	58,500,000	.....
One tablet was taken just after preceding gargle. After one hour throat was again gargled. Count on blood agar.	1 hour	1 tablet	.....	558,300,000
Same gargle as above, but count was made on plain agar	0	1 tablet	.....	55,875,000
Normal conditions	2 days	0	79,125,000	.....
One tablet was taken just ten minutes before gargle was made	1 hr. & 10 min.	1 tablet	.....	56,250,000
Normal conditions	2 days	0	46,750,000	.....
One tablet was taken just ten minutes before throat was gargled	1 hour	1 tablet	.....	38,500,000
Teeth and mouth were thoroughly washed with soap just before gargle was made.	5 days	0	47,370,000	.....
Teeth washed as above and one tablet taken ten minutes before gargle was made.	1 hour	1 tablet	.....	21,225,000

TABLE 4.—SHOWING THAT FORMAMINT FAILS TO REDUCE THE NUMBER OF STREPTOCOCCI IN THE THROAT

Conditions of the Test	Time Since the Preceding Test	Amount of Formamint Used	No. Found in Throat Before Use of Formamint	No. Found in Throat After Use of Formamint
Normal	.....	0	1,200,000	.....
One tablet was taken and throat gargled one hour later	4 days	1 tablet	.....	14,750,000
Normal	3 days	0	9,950,000	.....
One tablet was taken and throat gargled ten minutes later	1 hour	1 tablet	.....	8,000,000

11. Heinemann: Laboratory Guide in Bacteriology, p. 86.

Discussion

The contention that Formamint contains formaldehyd was confirmed by analysis.

The manufacturers also maintain that Formamint is a new, definite chemical compound, consisting of five molecules of formaldehyd and one molecule of lactose, and that when dissolved in the saliva the formaldehyd is liberated in some new and peculiar form, which they call nascent formaldehyd. This new kind of formaldehyd is, according to the advertising literature, especially powerful in its germicidal properties and at the same time has absolutely no irritating or harmful effects.

NOT A CHEMICAL COMPOUND

Thoms,[12] retained as an expert by the German government, decided, after a series of chemical investigations, that Formamint was not a definite chemical compound, but that it was probably a solid solution of formaldehyd in lactose. He proved that when the process of manufacture was carried out in exactly the way called for by the Formamint patents, compounds containing a greater or less per cent. of formaldehyd could be made while the other properties remained similar to those of Formamint. The composition of the final product depended on the proportion of the components used in the process. Therefore Formamint did not form a safe means of uniform dosage.

As a result of Thoms' work the German courts held that Formamint was not a new chemical compound. Consequently the Formamint patent (Number 189036) was annulled in Berlin, Nov. 29, 1913.

Again the contention that formaldehyd in the nascent or active condition is less poisonous and irritating than in its ordinary form is contrary to what would be expected from the behavior of such compounds. If it were liberated, as claimed, in the "nascent" condition, it would be, for that very reason, not only more active but also more harmful.

As a matter of fact, Formamint did have an irritant effect on the worker who carried out these investigations. When one tablet was taken each hour for twelve consecutive hours, marked irritation of the intestinal tract resulted. There was almost sufficient nausea to cause vomiting and uneasiness in the alimentary canal following the experiment. When the twenty-four tablets were taken the results were similar but more pronounced. This is decidedly in contradiction to the assertions of the manufacturers.

Otto Seifert,[13] moreover, cites the following:

"By Effects: Only a few patients complain of an unpleasant sharp taste, burning of the tongue (Seifert, Sklarek). Among the general symptoms observed are urticaria-like exanthems (Glaser, Roters), which are accompanied by nausea, vomiting, headache, insomnia and vertigo, burning and irritability especially in the larynx (Meissner); phenomena of poisoning (Geissler); gastric disturbances (Engelmann); renal irritation (Steinhard); unsuited for diabetics (Voit)."

The contention that Formamint, when mixed directly with mediums and left in contact with bacteria, will kill the organisms was corroborated. Thus the statements and pictures in the booklet, "The Gospel of Prevention," which is enclosed with each bottle of Formamint, showing the inhibition of growth of air bacteria on plates containing Formamint are no doubt true and authentic.

Finally, the claim that Formamint is an almost perfect throat disinfectant was by no means confirmed, as a glance at the tables will show. One hour after it is taken, even when a tablet was used each half hour for twelve hours, the number of bacteria in the throat was practically the same as when Formamint was not used. Even ten minutes after taking a tablet the number of bacteria in the throat was never greatly reduced as is maintained by the manufacturers.

HAS NO SELECTIVE ACTION

Formamint exerts no selective action in killing off the very delicate organisms which are more apt to be pathogenic. When the comparative counts were made on blood agar which would favor the growth of the delicate parasitic organisms, no reduction whatever was shown by the use of Formamint.

The number of streptococci was found to be the same, within limits of experimental error, ten minutes after taking a tablet as it was before the tablet was taken.

Therefore it seems that Formamint fails, as any such germicide would be expected to fail, to kill bacteria in the crypts and recesses of the throat, for when dissolved in the mouth it cannot reach and remain in contact with the organisms long enough to kill them before it is swallowed.

SUMMARY

Summed up the investigation shows:

1. That the claims made for Formamint are extravagant and misleading.
2. That the recommendations for the use of these tablets may be, in some cases, fraught with danger and are a menace, not only to the health of the individual, but also to the safety of the community.
3. That the claim that Formamint is a definite chemical compound is false.
4. That the use of Formamint may produce marked irritation of the intestinal tract, and finally,
5. That Formamint is not a throat disinfectant as the manufacturers maintain, but its action on the bacteria of the throat is an almost negligible one and dependence on Formamint for the prevention of infection and for curing disease is not only unwise but dangerous.
6. That Formamint conflicts with the rules of the Council. False statements are made with regard to its composition (Rule 1); grossly unwarranted claims are made for its therapeutic properties (Rule 6), and therefore its exploitation to the public (Rules 3 and 4) is a public danger.

It is recommended that this report be published, to call attention not only to the falsity of the claims made for, and the danger in the use of, Formamint, but also to emphasize the utter inefficiency of all such methods of "disinfecting" the throat.

12. Thoms: Arb. a. d. Pharm. Inst. d. Universität, Berlin, 1914, xi, 210.
13. Seifert, Otto: Die Nebenwirkungen der modernen Arzneimittel, 1915.

Correspondence

The Official Responsibility of the State in the Tuberculosis Problem

To the Editor:—In THE JOURNAL (Aug. 7, 1915, p. 512) appears a most interesting paper by Dr. William Charles White of Pittsburgh, which was read at the recent meeting of the National Association for the Study and Prevention of Tuberculosis, at Seattle. All those who are vitally interested in the tuberculosis problem are of the opinion that only by united and concerted action between city, county and state authorities with the federal government can mitigation and control of tuberculosis be accomplished. Dr. White, in the beginning of his paper, refers to the unsatisfactory demonstrations made for the control of the disease, and expresses the opinion that if a unit in a community ever so small could demonstrate a feasible plan for the control of the disease, such a plan could be adapted by any community, as a whole, as a practical working plan. In 1911 Dr. Petruschky of Danzig attempted to put into execution just such a plan, and in his report four years after summarizes the most gratifying results. In the small village of Hela, situated on the peninsula of that name, a community consisting of fishermen and their families, in all about 500 souls, he undertook to examine by various methods every man, woman and child, and from the inception of that plan to the present time they have always been under observation. Whereas in the seven years previous to this vigilant inspection, nine cases of death from tuberculosis were reported, there has not been a single fatal case in the past four years. Fifty schoolchildren were all tested with tuberculin, and twenty-five reacting positively were at once given dietetic, hygienic and tuberculin treatment. The

remaining twenty-five, and all new children entering the school, were given a test once in six months, and kept under constant observation. All families, with the assistance of social workers, nurses and the moral support of the parish priest, were placed under the most hygienic housing conditions, and under this careful and strict management not a single new case of pulmonary tuberculosis has been observed during the past four years.

In 1913, Dr. Dietz of Darmstadt, mainly through the efforts of the insurance associations, attempted the control of tuberculosis in a small village in which it was very prevalent, and Dr. Kutchera in the Swiss Alps, since 1913, has been attempting to demonstrate on a large scale the control and arrest of pulmonary tuberculosis. In a large convent of about 500 sisters, in which pulmonary tuberculosis was very prevalent, he reports that by individual care, observation, examination and treatment in nine months, a perceptible improvement in the general condition was noticeable in 85 per cent. This all goes to show that community attempts on small units are making for the control of tuberculosis; but time alone can tell or demonstrate if permanently good results will follow. I do not believe that in any large community, where the views on this most important problem are so divergent, much good will come from any plan which we may devise, unless we first educate the community to a better understanding of this vexed problem and its great importance for the present and coming generations. JOHN RITTER, M.D., Chicago.

The Losses of Weight in the Newly Born

To the Editor:—Your editorials are always instructive, and form part of my weekly reading. This is why I have noticed "The Losses of Weight in the Newly Born" (THE JOURNAL, Aug. 7, 1915, p. 531). This loss begins under ordinary circumstances on the first day, not, as your editorial says, on the third or fourth, and is observed in all individuals without exception unless these individual babies be not starved. Before birth the baby was constantly supplied with food, and immediately afterward it is expected to do without any, or too little. If this little consists of improper substances, so much the worse for the baby. The "effort to force nutrients on an unprepared organism has no advantage." You also say children fed abundantly with artificial mixtures "sometimes experience the severest losses of weight." We practitioners are well aware of that. Without any "modern" education we know that both our new-born and advanced babies are made sick (who is not?) on indigestible food, and may lose weight, health and life. We never waited for your "more recent investigations," or the "more refined chemical technic of today," or "the demonstration of diverse enzymes" to appreciate the facts of emaciation, illness and loss of weight in the newcomer.

Maybe I never understood fully the secret of successful teaching which, according to Osler, consists in "reiteration, reiteration and reiteration," and therefore deserve a good deal of the oblivion, oblivion and oblivion I enjoy at the hands of my friends and pupils of 1860 and ever since. Unless you object, I propose, in connection with the rights of my old friends, the newly born, to copy from my presidential address of 1912 the following lines which you published in your issue of June 8, of that ancient year:

> The tissues of the newly born contain more water than those of the adult; the difference amounts to 10 per cent. *Loss of water* is badly tolerated, while large quantities are eliminated at once through the lungs, kidneys and skin, and some through the intestines. Without a proper supply, the tissues deteriorate, and the physiologic equilibrium is lost. That was always so — the newly born is conservative — and was considered normal. The baby had to be satisfied with reading in every text-book — even in the old ones from which some new ones are compiled — that he has to please the attending oracles by giving up 10 or 20 per cent. of his weight within a week or two. However, as the mother has but little milk during the first days, the least the baby should have a right to expect is water — at least teleology ordains it so — the more so as the first mammary secretion means colostrum, which contains three or four times as much protein as the milk of later weeks — that means 3 or 4 per cent. That is mainly so — even still more so — when the baby is premature and endowed with less vitality than when born at full term.

What I want to urge on those who have read your editorial is the lesson I repeated annually since I began public teaching in 1860. Give the new-born water to replace what he is losing. If that is not "scientific," it is intelligible without "giving the parents a written dietary." The parents do the same things for their own persons, namely, when they have lost water they drink. If they treat their new-born on that line, that baby will not lose weight to the extent your editorial takes for granted. In a large obstetric practice which extended over twenty years and did not terminate until about forty years ago, I have demonstrated that to my full satisfaction, and to that of many pupils and friends these two generations. My plea after all is *water*. It may be properly mixed when the maternal supply takes long to be amply supplied. The addition is barley water and after a few days boiled (or pasteurized) cow's milk. How much? Ten per cent. in the thin barley water, sweetened with cane sugar or not. No crime is committed by making it 9 or 11. I know babies; they do not care for mathematics, and thrive without formulas.

Your issue of August 14 tempts me to add a few words concerning "barley water" which met a few encouraging words from DR. H. D. CHAPIN (THE JOURNAL, Aug. 14, 1915, p. 571). I have followed the advice given by him in these words: "We should study this subject from the practical standpoint and find out what agrees with the baby and then find the scientific reason for its use." In a practice of more than sixty and in my teaching of more than fifty years, indeed, I never diluted milk with water, but always with barley (occasionally oatmeal) water. In my first magazine writings, in my "Infant Diet" of nearly fifty years ago, in the great "Hand Book" of Gerhardt, in Buck's "Hygiene," in my "Intestinal Disorders," in my "Therapeutics of Infancy and Childhood"—all out of print, I am now sorry to say—and in endless discussions and papers, I have preached the gospel of barley water. Dr. Chapin credits me with having done so "some years ago." I have not invented barley nor discovered it—it has been eulogized by Homer for its being "the marrow of man." That was "some years" before my time, even before van Swieten, from whom I learned it. But I utilized barley water nearly twenty years before Zweifel, Schiffer and Korowin found the experimental proofs of the availability of amylaceous foods. That was nearly forty-five years ago.

Now Mr. Editor, I promised myself and you to be very brief. I do not believe that the constant repetition of often proved or self-evident facts is among your obligations to the American Medical Association and your other subscribers, or that it is your duty to please the rediscoverers of things that have been discovered and published one or many times. In the minds of the "pediatrician" of today, in the minds of any doctor who respects the history of his science and art sufficiently to know it, "the old woman of a generation ago" is a misnomer. Pediatrics is not of yesterday. Please read Garrison's history of medicine. If you do not care to study Soranus or even Rosén von Rosenstein, recall Charles West, Rilliet and Barthez, Gerhardt, or your own J. Lewis Smith, and the doings of the New York Medical College, the Bellevue Medical College and the University Medical College, whose activities date back more than "a generation ago" and "the old woman."

A. JACOBI, M.D., New York.

Cataractous Families

To the Editor:—Recently I removed a mature cataract from the right eye of Mrs. H. W., aged 51. The one in the left eye is now mature.

Shortly afterward I removed a ripe cataract from the left eye of Mrs. W.'s brother, aged 45. Five years previously the right eye had been operated on for cataract, but the operation had been followed by iritis, panophthalmitis and enucleation.

Not long afterward I removed a mature cataract from the right eye of a sister of the two patients mentioned above, aged 48. JOHN L. DICKEY, M.D., Wheeling, W. Va.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

JINTAN—A CHINESE NOSTRUM

To the Editor:—Enclosed I am sending you a couple of packages of Jintan. This stuff is sold far and wide over China. I have never yet seen any article so widely advertised as this is in China. The whole country is literally covered with its ads. Needless to say, the most extravagant claims are made for it. It has a large sale.

I should like very much to know something about what it contains and about how much would be the cost of the ingredients to make pellets that I enclose. With this information I can get in some effective blows in exposing the cheat.

A. C. SELMON, S. D. A. China Missions Training School, Shanghai, China.

ANSWER.—The specimen of Jintan (small, reddish-brown pills said to be made by H. Morishita) referred to by our correspondent was analyzed by the Chemical Laboratory of the American Medical Association. It reports:

Qualitative tests indicated the absence of potent alkaloids, iron and other heavy metals, saline laxative salts and emodin-bearing cathartics such as rhubarb, aloes or cascara in therapeutically effective amounts. Sugars were present in considerable quantities and the pills were highly aromatized, suggesting "breath perfumes" like "sen sen." A vegetable drug was present but was not identified. Physiologic experiments indicated that the pills possessed no material potency.

As the unidentified drug is likely to be of Japanese or Asiatic origin, and as the pills appeared to be devoid of therapeutically active drugs, no great amount of time was spent in an attempt to recognize this drug.

While the reported examination is not exhaustive, it seems to demonstrate sufficiently the general worthlessness of the nostrum. We cannot estimate the cost of the ingredients, but we venture a conjecture that the principal expense in the business is the advertising.

ARTICLES ON PAINFUL FEET

To the Editor:—Please give a list of references to articles on painful feet (excluding fallen arches).

H. C. STEIN, M.D., New York.

ANSWER.—

Porter, J. L.: Painful Affections of Feet, *Surg., Gynec. and Obst.*, January, 1911; abstr., THE JOURNAL, Feb. 4, 1911, p. 379.

Watkins, G. T.: Unusual Manifestations of Detective Feet, *California State Jour. Med.*, February, 1913; abst., THE JOURNAL, March 4, 1911, p. 698.

Strunsky, M.: Avoidance of Mistakes in Diagnosis of Foot Troubles, *New York Med. Jour.*, Feb. 4, 1911; The New Heel, THE JOURNAL, April 12, 1913, p. 1152.

Osgood, R. B.: Pathologic and Symptomatic Weight-Bearing. Consideration of Prevention and Cure of Foot-Strain, *Am. Jour. Orthop. Surg.*, February, 1912.

Tubby, A. H.: Some Obscure Affections of Foot, *Clin. Jour.*, London, April 23, 1913.

Dunlop, G.: Foot-Strain: Anatomic Explanation with Suggestions for Treatment, *Washington Med. Ann.*, July, 1914.

Hibbs, R. A.: Muscle Bound Feet, *New York Med. Jour.*, Oct. 24, 1914; abstr., THE JOURNAL, Nov. 7, 1914, p. 1698.

Tyrrell, J. B.: Foot Troubles as Factor Affecting Human Efficiency, *Med. Rec.*, New York, Nov. 7, 1914.

Millikin, M.: Foot as Affected by Modern Shoe, *Ohio State Med. Jour.*, November, 1914.

Billington, R. W.: Static Foot Disorders, *Tennessee State Med. Assn. Jour.*, February, 1915.

Lower, F. S.: Foot Ailments, *Illinois Med. Jour.*, March, 1915.

MANUFACTURE OF SALVARSAN

To the Editor:—Is salvarsan or neosalvarsan made in the United States? If so, by whom?

A. S. GOCKLEY, M.D., Carroll, Iowa.

ANSWER.—So far as we know, neither salvarsan nor neosalvarsan is manufactured in the United States. Under United States patents granted to the Farbwerke vorm. Meister, Lucius and Bruening, Hoechst a. M., Germany, this concern controls the sale of the products in this country. So far the products sold here have been those manufactured by the Farbwerke in its German factory, and we are not aware that the owners of the patents have taken any steps toward the production of salvarsan or neosalvarsan in the United States.

As the United States (differing in this from other countries) grants patents on the process, as well as on the product, the manufacture of salvarsan in the United States by others than the holders of the patent would be contrary to the law, even if a totally different process of manufacture were used from that covered by the patent.

We understand that in England the patent has been suspended, and that it is being manufactured there, and that under another name it is being made in Canada.

NEXT DOSE IN TUBERCULIN THERAPY

To the Editor:—Please tell me where I can find an article by Dr. Myer Solis-Cohen on "The Determination of the Next Dose in Tuberculin Therapy."

EDWARD SPEIDEL, M.D., Louisville, Ky.

ANSWER.—THE JOURNAL, Oct. 17, 1914, p. 1386.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 203 National Bank of Arizona Bldg., Phoenix.

COLORADO: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

IDAHO: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

MINNESOTA: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MONTANA: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

NEW HAMPSHIRE: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

NEW YORK: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

PORTO RICO: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

RHODE ISLAND: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

California April Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, April 13-16, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 32, of whom 22 passed, including 1 drugless practitioner, and 10 failed, including 5 drugless practitioners. One applicant was licensed under the Army and Navy clause. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, San Francisco	(1914)	77.4, 79.1
Cooper Medical College	(1903) 81.9; (1912)	75.7
Hahnemann Medical College of the Pacific	(1913) 83.4; (1914)	79.7
University of California	(1914)	85
University of Illinois	(1914)	81.9
Tulane University of Louisiana	(1914)	75
Johns Hopkins University	(1913)	88.4
New York Homeo. Med. Coll. and Flower Hosp.	(1913)	82
Jefferson Medical College	(1905) 82.2; (1914) 79.1, 79.5, 81.4, 82.8,	90.9
Trinity Medical College	(1890)	
McGill University	(1911)	83.5
University of Bonn, Germany	(1914)	79.8
University of Geneva	(1913)	87.2
FAILED		
California Eclectic Medical College	(1913)	72.1
College of Physicians and Surgeons, Los Angeles	(1914)	72
Oakland College of Medicine and Surgery	(1914)	67.4
Jenner Medical College	(1901)	74.7
Harvard University	(1913)	71.8
LICENSED UNDER THE ARMY AND NAVY CLAUSE		
College of Phys. and Surgs. in the City of N. Y.	(1887)	1

Book Notices

CASE HISTORIES IN OBSTETRICS. Groups of Cases Illustrating the Fundamental Problems Which Arise in Obstetrics. By Robert L. DeNormandie, A.B., M.D., Assistant in Obstetrics, Harvard Medical School. Cloth, Price, $4. Pp. 516. Boston: W. M. Leonard, 1914.

This book is a successful attempt to supplement the rather general instruction, given in the textbooks, in the management of the different problems of obstetrics by detailed rules of procedure elucidated by suitable examples. The author gives the histories of seventy-six actual cases illustrating twenty-eight obstetric problems, such as diagnosis of pregnancy, forceps, breech delivery, contracted pelvis, sepsis, mastitis, etc. The unnecessary details of every entry in each case are not given, but an attempt is made to bring out every important point in at least one case of the group. Following the reports of the cases of a group a summary is given of all of the points pertaining to the management. This plan is executed so well that hardly any question concerning the management of any obstetric problem can be raised that has not been clearly discussed and answered.

Of course the plan is not new: it was adopted by Smellie and all the earlier English and French writers. The school textbook and lectures of fifty or sixty years ago were illustrated by many reports of cases. As the theory of obstetrics has developed in recent years, more space has been required in the textbooks to present the science in a systematic form, and the case histories have been gradually crowded out. In this country, especially, didactic teaching in obstetrics has largely usurped the place of clinical teaching. The lack of clinical material, or rather the indolent failure to make use of the clinical material at hand, is responsible for the fact that many students have been graduated without even having personally supervised a confinement. Textbook recitations, lectures and quizzes were sufficient to qualify a student for the written state board examinations, and the teaching was largely adapted to this end. Dr. DeNormandie's book would have been a very valuable supplement to the old didactic teaching. It is no less valuable as a model for the new method of clinical instruction. More and more the tendency is to divide the obstetric teaching into a year's work in theory and a year's work in training in the obstetric art. For the latter course this book could be used with great profit.

In the large number of practical problems discussed, it is unavoidable that the views of the reviewer must sometimes differ with those of the author. The Prochownik diet is indicated in a variety of conditions, but as a routine in all cases in the last two months of pregnancy in order to obtain a smaller baby it is hardly advisable. The cases of nausea and vomiting of pregnancy are not well selected to show severe vomiting of the first trimester, nor do they demonstrate the value of rectal injections of dextrose solutions. One is somewhat surprised at the nonchalance with which the report is made of the detection of ether in the baby's breath in a case of partial asphyxia of the baby after a forceps operation made under ether narcosis. Manual dilatation and extraction in placenta praevia is generally held to be dangerous and responsible for many of the bad results in this serious complication. Holding the uterus during the third stage of labor to prevent hemorrhage is of doubtful value, and frequently leads to harmful massage that interferes with the normal mechanism in the expulsion of the placenta. Why use an intra-uterine mercuric chlorid douche for postpartum hemorrhage when sterile water is just as efficient and carries no danger of poisoning? The temperature of the douche recommended, 110 F., is much too low. It is not clear why a patient should remain absolutely flat on her back for six hours after labor, or why she should remain in bed from eighteen to twenty-one days. A temperature in the puerperium of 102, ascribed to excitement due to visitors, probably could be better explained by the fact that the abnormal temperature followed a manual dilatation of the cervix and a forceps delivery. Likewise a high temperature on the fourth day of the puerperium, ascribed to the appearance of milk, followed a bag and manual dilatation and forceps delivery with deep tears in the vagina and cervix.

More serious criticism could be made of the practice of the author in applying high forceps in occiput posterior positions. In Case 19 this resulted in laceration of the perineum and relaxation of the sphincter ani, and in Case 21 in shock, and laceration of the cervix and perineum. A study of the histories does not convince one that forceps were indicated, but rather leaves the impression that with sufficient and careful analgesia, the patient could have been satisfactorily managed either till labor was ended spontaneously or until dilation was completed and the head descended, thus avoiding the difficulties and dangers of high forceps.

Notwithstanding these exceptions to a very few details, we find that most of the rules show wisdom, common sense and ripe, well-used experience. It deserves to be and promises to become one of the most popular books on obstetrics that has appeared for some time.

Miscellany

Errors in Bacteriologic Milk Analyses

Great differences in the results of the bacteriologic analysis of identical samples of milk have in some places led to a discrediting of such analyses. The methods ordinarily used have been those formulated by the American Public Health Association, and have been regarded as standard.

In October, 1914, the public health laboratory of the city of New York, under the supervision of W. H. Park, the Lederle laboratory, directed by H. D. Pease in the bacteriologic department, the sanitary laboratory of C. E. North, and the bacteriologic laboratory of the Borden Condensed Milk Co., under the direction of Dr. F. X. Govers and Mr. W. D. Strack, conducted a series of tests for the purpose of determining the causes of the great variation in tests of milk samples by different bacteriologists. H. W. Conn of Wesleyan University was made referee, and in *Public Health Reports*, Aug. 13, 1915, describes these tests, giving the tabulated results. In a general summary of the work, among other things, he says: The standard methods of milk analysis of the American Public Health Association are in need of revision. They lay great emphasis on some of the least important points and neglect to lay emphasis on some of the most important ones. A revision of these methods is now in the hands of committees appointed by the American Public Health Association, by the Society of American Bacteriologists, and by the Association of Dairy Instructors.

No single count can be relied on. An average of two or more plates should be required in determining the bacterial content of any sample of milk. Wide variations in the composition of the culture mediums do not make any noticeable difference in the bacterial count. In these tests it was found that variations in analyses were due largely to differences in technic. Among the reasons for differences were: laboratory errors, irregularities in methods of laboratory technic, such as shaking of the samples, amount of dilution, methods of counting by a counting lens, or without the use of one, etc. For instance, the extent of shaking makes a difference in the result. Counts from highly seeded plates are uniformly lower than the counts from low seeded plates. Best results are obtained when the plates contain somewhere between forty and 200 colonies. Another factor modifying the counting is the practice followed by laboratories of estimating number rather than actual counting.

It was found that there are irregularities in samples of milk from the same bottle, explained as due to the clumping of bacteria, and that the bacteria being solid objects cannot be expected to be distributed uniformly through the liquid. One sample may contain one fourth as many bacteria as another from the same bottle. After determination of these causes for variations in the count and the adoption

of methods to bring about uniformity in technic, the variations were greatly reduced.

In regard to the technic, it is stated that there is no essential difference in the results whether the milk diluted is directly inoculated into the Petri dish and the agar poured on it, or whether the diluted milk is inoculated into a melted tube of agar and subsequently poured into a dish.

Five-day incubation gives a very slightly greater count than a two-day incubation. This was not considered of sufficient importance to change from the two-day count. A twenty-four-hour count gives on an average about one-half as high numbers as a forty-eight-hour count.

With the adoption of uniform technic in the four laboratories, the counts were fairly close together, and were considered accurate enough to warrant the three grades of milk that have been adopted by the commission on milk standards, in which Grade A includes milk having counts below 200,000, Grade B from 200,000 to 1,000,000, and Grade C all above 1,000,000. For this broad grading, it is stated that it is necessary to have an average of at least four or five analyses in order to rely on the results.

Methods of Destroying Lice

J. P. Kinloch of the University of Aberdeen made an investigation with reference to the control of vermin among troops liable to be infected with typhus. Among his conclusions, as given in *Public Health Reports*, are the following:

Dry heat is more effective than moist in destroying lice and their eggs. The paraffin bodies are actively insecticidal, and of these gasoline is the most effective, in which they are destroyed after immersion for one minute. The vapor kills them in half an hour. Powerful fatty solvents other than paraffin are actively insecticidal. Benzin, toluene and acetone are as effective as gasoline. Certain chlorin derivatives of methane, ethane and ethylene are often more effective, and are noninflammable. Exposure to the vapor of these substances is fatal in five minutes. Soap solutions containing 2 per cent. of trichlorethylene or 10 per cent. tetrachlorethane are capable of killing in half an hour at ordinary temperatures all lice and nits.

Practically the destruction of lice and nits is best done by immersion of the garments and bedclothes in gasoline or benzin. If clothing will not be injured by immersion in water, steeping for half an hour at 12 C. (53.6 F.) in soap solution containing 2 per cent. of trichlorethylene or 10 per cent. of tetrachlorethane destroys lice and nits. Derivatives of chlorin and ethane in the form of gas cannot be used, but their soap preparations are of value. For cleansing the body, soap solutions containing 2 per cent. of trichlorethylene or 10 per cent. tetrachlorethane are best. It is believed that lice will not live on the body if it is anointed daily with 25 per cent. solution of trichlorethylene in petrolatum or twice daily with a mixture of gasoline in petrolatum of the same strength.

Owner's Liability for Injury Resulting from Use of Automobile

Probably few prospective purchasers of automobiles for general family use, observes Joseph T. Winslow in the August *Case and Comment*, reflect upon the legal liability which may attach to them by reason of damage or injuries resulting from the use of the machine by members of their family. In view of the present state of the law and its apparent trend, however, it would appear a wise course, from a financial standpoint, for purchasers and owners of cars intended for such use to give attention to this question, and to see to it that when they are being used on the public highway they are at least in charge of persons competent to operate and manage them.

There are two theories on which it has been sought to hold owners responsible for injuries resulting while their cars are being operated or used by members of their families; first, on the theory of respondeat superior, and, second, on the doctrine of dangerous agency or instrumentality.

Medicolegal

Privileged Character of Information Gained by Inspection of Patient

(Vazoo & M. V. R. Co. vs. Messina (Miss.), 67 So. R. 963)

The Supreme Court of Mississippi, in affirming a judgment in favor of the plaintiff Messina for personal injuries, says that after the wreck the defendant company sent its own surgeons to take charge of the injured, and to carry them to a hospital. There was some evidence tending to show that the plaintiff was not given that care and consideration which he was entitled to receive while he was at the scene of the wreck. To rebut this evidence the defendant offered to prove by its surgeons that they examined the plaintiff at that time, and that the wounds had been dressed and properly treated, and that that was all which could have been done under the circumstances. At the instance of the plaintiff the trial court excluded this evidence from the jury. Section 3695 of the Code of 1906 provides: "All communications made to a physician or surgeon by a patient under his charge . . . are hereby declared privileged." It will be noted that the plaintiff was a patient under the charge of the surgeons selected by the defendant. By the statute "all communications" made to a physician by his patient are privileged. It was argued by the defendant that the evidence offered did not consist of "communications" by the patient to the physician; that the physician's information was gained by an inspection of the patient, and that the statute did not cover this character of evidence. Taken literally, this view of the statute may be sound; but, when it considers the manifest policy of this sort of legislation, the court believes that what the defendant sought to prove was communicated to the witness by the patient. Except as a physician, he was not qualified to testify. His knowledge of the matter inquired about came to him from his examination of his patient. It is not necessary that the communication should be made by words in order to make it privileged. There is no more sacred relation of confidence than the relationship of physician and patient, and it was, in the court's opinion, the intention of the legislature to close the lips of the physician concerning any and every thing he knows about the patient by oral communication or from a physical examination of his patient. This statute protecting the patient makes privileged "all communications," and it would be absurd, the court thinks, to say that what the patient says to the physician is privileged, but what is communicated to the physician by his expert examination and exploration of his patient's body is not privileged. The oral communications are usually of little importance, but the physical examination is always of prime importance. The fact that the physicians in the present case were not called by the plaintiff, but were sent by the defendant to examine or treat the plaintiff, did not change the legal aspect of the case. The physicians were acting in their professional capacity, and the plaintiff was their patient, and all communications to their professional senses are privileged, and the physician, however willing he may be to violate the confidence of his patient, will not be permitted to do so by the wise provisions of the statute. In the light of such authorities as this court has been able to find, the overwhelming weight are in accord with this view of the law.

Unavailable Defenses for Unlawfully Prescribing Morphin

(Hyde vs. State (Tenn.), 174 S. W. R. 1127)

The Supreme Court of Tennessee affirms a conviction of the appellant Hyde, a practicing physician, of unlawfully prescribing morphin, in violation of the act of 1913. The court says that this is modeled after, and closely conforms to, the act of Congress later passed and approved Dec. 17, 1914, effective on and after March 1, 1915, so far as the provisions of the congressional enactment could be made applicable to and regulate intrastate sales of the drugs affected, there being left a not inconsiderable field for the operation of the local act, which is the initial step in Tennessee in the

regulation of the sale of habit-forming drugs. The court does not agree with the contention that the state statute, so far as the appellant was concerned, was a regulation of the practice of medicine, and not a regulation of sale or sales. The practice of medicine is not undertaken by it to be regulated; it is affected at but a single and minor point, by way of incident to the distribution of the particular drugs a physician may find it necessary in his practice to prescribe. Nor does the provision that a physician can prescribe the indicated drugs only when he is in personal attendance on the patient arbitrarily curtail his right to practice by prescribing according to methods formerly obtaining. It does not violate either the fourteenth amendment of the federal constitution, or the provision of the state constitution that no man shall be deprived of his liberty or property but by the law of the land. It is not unreasonable or arbitrary to hedge about the issuance of such prescriptions by making it a condition that the physician "shall personally attend the patient"; since only by personal observation and diagnosis can the physician be sure that the drug is needed—that he himself is not being imposed on in an effort through him to defeat the very purpose the statute has in view. In this case a detective, under employment by the pure food and drug department of the state, went to the office of the appellant and requested a prescription for morphin for an alleged friend of his, Louise Walker, who he said lived on a certain street. No such woman existed, and there was no such street address as that given. Having obtained the prescription and paid for it, the detective took it to a pharmacy, where it was filled, the detective paying for it. The court holds that, on sound principle and true policy, the physician must be held to answer as a principal in the offense committed in the illegal sale. The court fails to see how the appellant could avail himself of the fact that the person prescribed for was nonexistent. Rather would it seem that this fact showed at once the recklessness of the accused and a substantial reason for the provision in the statute that the giving of a prescription for the drug should be only to a patient actually attended. The appellant's attempted defense came to this: There can be no guilt if there be no real and indicated patient to receive the product of the prescription; therefore, in order to a defeat of the statute with impunity, it is only necessary to put out prescriptions for fictitious persons. If the prescriptions or the drugs derived through them come into the hands of habitual users or whomsoever, what does it concern the physician? The lawmakers certainly did not intend to pass a statute thus inane. The beneficient end they had in view should not be thwarted by any refinement of reasoning; certainly not by reasoning that leads to a conclusion so unsatisfactory, not to say unsound. Nor may the physician successfully defend by proving that the prescription was caused to be issued and the sale to be made by means of the solicitation of an agent of a department of the state government, for the purposes of a criminal prosecution. Whatever may have been the trend of the earlier authorities, it is now a well-established rule that such acts of a government agent do not absolve the defendant's act of criminality.

Employment of Physician by Secretary Managing Affairs of Corporation

(Greenwelder vs. Wilte Hardware Co. (Mo.), 175 S. W. R. 275)

The St. Louis Court of Appeals affirms a judgment in favor of the plaintiff for medical and surgical treatment rendered to a man who was severely injured while in the defendant's employ. The court says that it is true that one does not ordinarily make oneself liable to a physician by calling the latter to attend a third person who has been injured, or is otherwise in urgent need of such attention. That is to say, from a mere request alone to perform such services, in the absence of a legal duty to provide the same, the law does not, as in the ordinary case in which services are requested, imply a promise on the part of the party making the request to pay the reasonable value of the services when rendered. The reason for this is obvious. The law recognizes that in the everyday affairs of life a physician is frequently summoned to attend a sufferer, who is perhaps unable to thus act for himself, by one who is impelled so to do by the precepts of humanity alone. But here the question was as to the power of the secretary of the defendant corporation, who was in complete charge of its business at the time, to bind it to pay the plaintiff for what became over eight months' treatment of the man at a hospital. The plaintiff was called by telephone to the defendant's place of business shortly after the man was injured. When he saw how seriously the man was injured, he telephoned for another physician. After examining the patient and consulting with the plaintiff, the second physician, at the plaintiff's request, made inquiry as to who was to pay for the treatment, and asked that a "member of the firm" be summoned. The secretary then came, and, on being told that it would be necessary to take the injured employee to a hospital for treatment, said, as the second physician testified: "Go ahead; do the best you can with him; if you have to take him to a hospital, go ahead; do the best you can." The court has no doubt that from this the jury could lawfully find the existence of an actual contract binding the corporation to pay for the hospital treatment rendered in reliance on the conversation thus had. It is sufficient if the facts and circumstances appearing are such that the existence of an actual contract may be lawfully inferred therefrom by the jury sitting in judgment on the facts in controversy; that is to say, if the jury found that the plaintiff rendered the services, in reliance on the conversation in question, intending to charge the defendant therefore, and that the defendant's authorized representative intended at the time to bind the defendant to compensate the plaintiff for such services, all of the elements of an actual contract were established, and it mattered not that the parties failed to formulate expressly the agreement by the use of appropriate words to that end. The secretary being in charge of the company's business at the time, and performing the duties ordinarily devolving on the president or other chief officer of a corporation, it cannot be doubted that this was sufficient to warrant a finding that he was vested with ample authority to bind the corporation in this instance. The point was made that the conversation mentioned above could in any event bind the defendant only to pay the reasonable value of the first or emergency treatment, and that, since the plaintiff did not thereafter confer with the defendant during the course of treatment at the hospital, he could at most recover only for such services as were reasonably necessary in the immediate emergency. But, however this might be under other circumstances, the court thinks that the contention could not be here upheld, as when the conversation was had the physicians had done all that they could for the injured man without removing him to a hospital for treatment, and it was with reference to this particular matter that the secretary was summoned, to ascertain who would be responsible for the expense to be thereby incurred.

Practice of Medicine with Herbs or "Domestic Family Remedies"

(State vs. Yee Foo Lun (Utah), 147 Pac. R. 488)

The Supreme Court of Utah affirms a conviction of the defendant of practicing medicine without a license. The court says that the information probably would have been better had it charged that the defendant diagnosed or treated an ailment instead of Smith, but no point was made on the information, and that is passed. The defendant claimed to be protected by the provision of the statute that nothing therein shall be construed to prohibit the sale or administration of domestic family remedies. But a concoction or compound of ginseng, cinnamon, licorice, sarsaparilla, etc., can neither in law nor in fact be regarded a domestic family remedy. That it is free from alcohol, chloroform, narcotic or alkaloidal drugs, and probably harmless, is not the controlling factor. Such a compound or concoction is not something commonly kept by nonprofessional persons in their homes, or of which they have general knowledge. Instead of calling it a domestic family remedy, it is better to call it

by its right name—a subterfuge to deceive the credulous and the afflicted. When the question is looked at from the defendant's evidence, the matter is still worse. A mixture of fourteen different herbs, equally efficacious for rheumatism, paralysis, appendicitis, piles and pimples, and which are so well known that properly to name and describe them requires the use of three languages; their curative powers so familiar as to be understood only by Chinese expert herbalists who acquired knowledge "of the precious secrets" only through tradition and by scientific learning so modern as to have been handed down generation after generation for centuries by Chinese herbalists and ancestors of the defendant, and which are so general and so common as to be had only at a Chinese store in San Francisco, or at a Chinese institute conducted by a Chinese expert herbalist, can in no sense be regarded as a domestic family remedy. It is anything but that. The defendant and his counsel calling the herbs a family remedy is of no significance. As well call a family remedy any compound of any or all kinds of familiar or unfamiliar bark, roots, herbs or weeds grown in the Orient or the Occident, and put out as a "cure-all" by a charlatan to deceive the credulous. Still further, the obvious purpose of the statute is to prevent practicing medicine without a license. Under the statute, any one who shall diagnose, treat or advise for any physical ailment or condition of another, for a fee, compensation or consideration, is regarded as practicing medicine. If any one does that without a license, he offends, no matter what remedy, substance or thing he may prescribe, give, administer or advise. He cannot exculpate himself by showing that he gave, administered or advised a domestic family remedy, or any other substance or instrumentality; much less a concoction or compound which is a mere subterfuge, or one whose curative powers are known only to so-called Chinese expert herbalists. He offends, though he may give or administer but castor oil, or Hostetter's bitters, or a boiled concoction of bark, roots or herbs, or may give nothing, and may only advise exercise or rest. Notwithstanding the defendant's play on words that he "did not diagnose the case or any other case," nevertheless, from even the things and facts testified to by him, he held himself out, undertook and attempted to do just that. Perhaps not as taught at modern medical institutions, but all the more offended because he did it *à la chinoise*. But whatever difference of opinion there may be on the record as to whether he diagnosed a physical ailment of Smith, or whether Smith diagnosed it for him, there certainly can be no doubt that he, without a license and for a consideration, treated Smith for an ailment. And since this is so, it is wholly immaterial what he gave or administered, or advised, whether a family remedy or not. The claim made that he charged only for the herbs and nothing for diagnosis, consultation or treatment was, like his concoction, a mere pretense, and an attempt to exculpate himself by bookkeeping. As well say one charged nothing for an operation, but charged $500 only for bandages and antiseptics.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

July, LXXII, No. 1, pp. 1-221

1 Relation of Psychiatry to State. S. E Smith, Richmond, Ind.
2 Publicity and Public Mind. D. S. Freeman, Richmond, Va.
3 Recent Extension of Out-Patient Work in Massachusetts State Hospitals for Insane and Feebleminded. L. V. Briggs and A. W. Stearns, Boston.
4 *Some Neglected Phases of Immigration in Relation to Insanity. A. J. Rosanoff, Kings Park, N. Y.
5 *Optic Neuritis and Color Fields in Diagnosis of Syphilis, Neurasthenia, Hyperthyroidism, Dementia Praecox, Manic-Depressive Insanity, and Third Generation Syphilis. H. G. Thomas, Oakland, Cal.
6 *Syphilis as Etiologic Factor in So-Called Functional Neuroses and Psychoses. J. D. Ball, Oakland, Cal.
7 *Thalamic Gliosis in Dementia Praecox. M. E. Morse, Worcester, Mass.
8 *Treatment of Paresis and Tabes Dorsalis by Salvarsanized Serum. (To be continued.) H. A. Cotton, Trenton, N. J.

4. **Neglected Phases of Immigration.**—Rosanoff claims, as the result of investigation, that there is no evidence to show that there is a greater proneness toward mental disease in the foreign-born than in the native population. The much-feared menace of an increased incidence of insanity in the future generations, as resulting from immigration, is not real, but imaginary.

5. **Optic Neuritis.**—Syphilis, especially hereditary syphilis, Thomas claims, is infinitely more common than any authorities have admitted or dreamed. The clinical evidences show the stigmata in the third, fourth and even more generations. Neurasthenia is absolutely caused by syphilis. It is not a psychoneurosis, but a distinct physical disease of the brain and cord. The psychoneurosis element is entirely secondary to and caused by syphilis. Dementia praecox, manic-depressive insanity, general paresis are only different grades of the disease. Insanity is cerebrospinal syphilis of different degrees, ranging from irritation, mild inflammation to actual degeneration of the tissue. Hyperthyroidism, hypothyroidism, interstitial nephritis (with possibly a small percentage of exceptions), and chronic sinusitis, are but symptoms that appear in syphilis. Tuberculosis has long been known to develop most easily in syphilitics, as the tissues are much less resistant. Cancers appear to be most frequent in syphilitics. In all cases Thomas has investigated he has seen absolutely no evidence that alcohol is the causative factor in insanity. It has always been syphilis. The neurasthenics are unbalanced; that is, the syphilitic brain craves; the subject drinks; alcohol poured into a syphilitic brain is disastrous. The nonsyphilitic alcoholic parents do not beget the idiot, defective children, but the alcoholic syphilitics do.

6. **Syphilis as Etiologic Factor.**—Out of 151 adult neurasthenics 100 per cent. showed optic neuritis, varying from mild to severe types; 46 per cent. showed scaphoid scapulas; 27, or 17 per cent., exhibited enlarged thyroid; 38, or 25 per cent., admitted syphilis; and 75, or 49 per cent., gave evidence of hereditary syphilis, either in stigmata present or in family history. Of the children exhibiting neurasthenic symptoms, 46 in number, 33, or 71 per cent., either had evidences of hereditary syphilis or had parents who gave histories satisfactory to any careful clinician. These 46 children also had optic neuritis; and 29, or 63 per cent., had scaphoid scapulas; 4, or 8 per cent., showed enlarged thyroid. Of 27 manic-depressive cases, 100 per cent. showed optic neuritis; 14, or 51 per cent., showed characteristic color field; 21 or 77 per cent., showed scaphoid scapulas; 8, or 29 per cent., exhibited enlarged thyroid. The 41 mentally deficient children, mostly juvenile court cases, gave satisfactory clinical evidence of hereditary syphilis, either in signs or family history, for all; 18, or 43.97 per cent., gave positive Wassermann. All three cases of migraine showed optic neuritis and scaphoid scapulas; and all gave decidedly suggestive family histories. The hysterical cases, 14 in

number, gave 14, or 100 per cent., optic neuritis; 3, or 21 per cent., scaphoid scapulas; 2, or 14 per cent., enlarged thyroid; 12 gave suggestive family histories.

7. **Thalamic Gliosis in Dementia Praecox.**—Morse states that some cases of dementia praecox in the fifth and sixth decades show a gliosis in the thalamus, which is more advanced and active than in other parts of the nervous system. This gliosis may be both peripheral and focal. Patients with other psychoses who died at about the same ages did not, in the cases examined, present a similar thalamic gliosis.

8. **Treatment of Paresis and Tabes Dorsalis.**—The total number of cases reported by Cotton is sixty-six, and in all 600 treatments have been given. Of this whole number some have only been treated for a short period and consequently cannot be used for comparative study at present. Therefore Cotton has selected thirty-one patients who have been treated for at least six months, but in all but a very few cases the treatment has been continued for over two years, or the patients have been observed for that length of time.

Archives of Internal Medicine, Chicago

August 15, XVI, No. 2, pp. 149-340

9 *Attempt to Determine Diagnostic Importance of Head's Zones of Hyperalgesia. L. Langstroth, San Francisco.
10 Apparatus for Quantitative Collection of Urine from Women. O. Folin and W. Denis, Boston.
11 *Bacterial Flora of Lymphatic Glands. A. L. Bloomfield, Baltimore.
12 *Study of Case of Paroxysmal Hemoglobinuria. C. C. Dennie, Boston, and O. H. Robertson, San Francisco.
13 Study of Respiration and Circulation in Picrotoxin Convulsions. L. J. Pollock and W. H. Holmes, Chicago.
14 More Recent Developments in Study of Anaphylactic Phenomena. H. Zinsser, New York.
15 *Amaurotic Idiocy. J. M. Wolfsohn, San Francisco.
16 *Studies on Circulation in Man. XIII. Blood Flow in Hands and Feet in Certain Diseases of Nervous System. G. N. Stewart, Cleveland.
17 Tumors of Sympathetic Nervous System and Medulla of Adrenal Glands, Especially Malignant Neuroblastoma. F. Harbitz, Christiania, Norway.
18 Potassium Poisoning in Nephritis. W. G. Smillie, Boston.

9. **Diagnostic Importance of Head's Zones in Hyperalgesia.**—In a series of 460 hospital cases examined by Langstroth hyperalgesia was a frequent finding in visceral disease. In diseases of the lungs hyperalgesia was found in 3 per cent. of the cases, or in 13 per cent. of those who complained of pain. In diseases of the heart and aorta, hyperalgesia was found in 7 per cent. of the cases, or in 18 per cent. of those who complained of pain. In diseases of the stomach, hyperalgesia was found in 24 per cent. of the cases, or in 37 per cent. of those who complained of pain. In diseases of the liver and gall passage, hyperalgesia was found in 25 per cent. of the cases, or 58 per cent. of those who had pain. In diseases of the intestines, hyperalgesia was found in 10 per cent. of the cases, or in 22 per cent. of those who had pain. In diseases of the kidney and ureters hyperalgesia was found in 45 per cent. of the cases, or in 71 per cent. of those who complained of pain. Whole dorsal areas as outlined by Head were rarely found, but certain maxima were frequently found. The large number of areas over which hyperalgesia may be found in disease of each viscus, and the number of viscera supplied by each segment, made hyperalgesia of practically no importance in diagnosis, with the possible exception of diseases of the kidney, in which it had a somewhat characteristic form.

11. **Bacterial Flora of Lymphatic Glands.**—None of the twenty-nine strains of bacteria isolated by Bloomfield from thirty-two lymph glands could be shown to be the cause of specific diseases.

12. **Paroxysmal Hemoglobinuria.**—The patient reported on by Dennie and Robertson was a congenital syphilitic with characteristic physical findings and a strongly positive Wassermann. He suffered from paroxysmal hemoglobinuria with typical attacks following exposure to cold. These attacks could be induced at any time. The characteristic hemolysis occurred under proper conditions in the test. It was shown by experiments that the patient's serum, red blood cells and complement must be present throughout the whole reaction, or hemolysis will not take place. The failure of the hemolytic reaction to take place unless the elements are first chilled together, the authors claim, is not due to an inhibiting substance which is active at blood temperature but inactive in the cold, as the sheep-rabbit system is in no way affected when brought into proper relation with this system. The failure is probably due to the peculiar makeup of the hemolytic amboceptor. The hematuria following a moderately severe experimental exposure to cold resulted from destruction of only approximately 6.3 c.c. of blood. Over 90 per cent. of the hemoglobin set free was excreted in the urine within two hours, and 96 per cent. in four and one-half hours. The authors believe that the very rapid excretion of hemoglobin by the kidneys probably explains the absence of any increased amount of urobilin in the stools.

15. **Amaurotic Idiocy.**—Wolfsohn's patient was a girl aged 6. Neither her parents nor any of her antecedents were of Hebraic extraction. Both parents are living and well and are not related. The daughter of a maternal uncle "had no control over her body at birth and died of brain trouble at between 4 and 6 months." A maternal granduncle died of "brain fever" at 14 years. There is no specific history of either parent. The Wassermann test in the mother's serum was negative. She had one miscarriage but no stillbirths. The patient was born at full term after two days' labor terminating with hard, high forceps delivery. The child was fed with proprietary foods from the first and never nursed. Its mother claims that the infant was kept drunk with gin for the first month of life. She was a fat but not strong child. A severe attack of pertussis occurred in the second year, but subsided without complications. This was soon followed by "inflammation of the bowels" with high temperature, but recovery was complete. From 2 to 2½ years the patient ran, played and talked—an active, healthy, apparently normal, child. At 3 she had "black measles." This was followed by "food poisoning" after eating canned deviled ham. The patient nearly succumbed. About three months later she had an attack of "indigestion" accompanied by unconsciousness and stiffness of the whole body. Recovery ensued which was followed by measles.

Just about this time (age 3½ years) the mother noticed that the child had a slight limp. A chiropractor was called who found the hip was "out" about one-half inch. This he replaced without benefit to the child. The patient's eyes began to "wander with a bewildered look" and a few days later she awakened with "attacks of crying and trembling and rigidity of the arms and legs which lasted a few minutes." These attacks increased in frequency, as many as twenty a day being noted. Sometimes one side alone, sometimes both sides, and at others the head or arms alone were convulsed. After some of the attacks the patient showed strabismus the rest of the day. A sudden noise or jar would bring on a "spasm." Because of increasing rigidity, which became rather constant about six months after onset, the patient was unable to help or feed herself and could not walk. From a bright, healthy, active child, within six to eight months she became a dull, apathetic, inactive invalid who gradually ceased to notice objects about her. The bowels were obstipated, necessitating daily enemas. Urination was involuntary. Generalized convulsions occurred about every week and lasted from three to five minutes. Twitchings, or rather tonic spasms of the quadriceps femoris, all the muscles of the shoulder girdle, arms, hands and neck developed and were continuous during sleep. The introduction of stovain (1/50 gr.) into the subarachnoid space controlled the spasms for six hours. Finally the spasms of the masseters became so severe that the lower jaw was dislocated. Meantime dysphagia and marasmus became very marked, the temperature rose suddenly to 105 and the patient died, three years after the onset of the disease. The brain alone was removed, three hours after death, by Dr. J. Oliver, whose studies on the pathology of this case are detailed.

16. **Circulation in Man.**—In early unilateral brachial neuritis the blood flow in the affected hand was found by Stew-

art to be decidedly greater than in the normal hand. This is interpreted as due to partial paralysis of the vasoconstrictor fibers in the nerves involved in the pathologic process. In long-standing unilateral neuritis with decided atrophy of the affected part, the blood flow is less on the side of the lesion than on the normal side. In peripheral neuritis affecting mainly muscular nerves, the changes in the blood flow of the hands and feet are not so conspicuous as when the cutaneous nerves are also involved, since a large portion of the total flow in these parts must belong to the skin. In hemiplegia there is, in general, a marked deficiency in the blood flow in the paralyzed members. In tabes, the blood flow in both hands and feet, but especially in the feet, has been found decidedly subnormal and the vasomotor reflexes feeble. In lead poisoning (without paralysis), the tendency to reflex vasoconstriction was conspicuous. This seemed to be the case also in alcoholic neuritis. In alcoholic intoxication and in a case of excessive cigaret smoking, the opposite was observed, namely, a tendency to marked reflex vasodilatation.

It is suggested that, in some cases, examination of the blood flow might aid in the detection of malingering, when the attempt is made to simulate certain neuropathologic conditions. It seems probable that the differential diagnosis, for instance, between such conditions as cerebral hemorrhage and alcoholic intoxication, or between hysterical palsy and paralysis due to an organic lesion, in doubtful cases might be facilitated by blood-flow measurements.

Boston Medical and Surgical Journal

August 12, CLXXIII, No. 7, pp. 253-262

19 Origin and Aims of Massachusetts Anti-Tuberculosis League. V. Y. Bowditch, Boston.
20 What Anti-Tuberculosis Organizations Can Do to Help State Department of Health. A. J. McLaughlin, Boston.
21 Present Situation in Regard to Local Tuberculosis Hospitals. J. B. Hawes, 2d, Boston.
22 Local Tuberculosis Dispensaries. W. G. Phippen, Salem, Mass.
23 First Annual Report of Massachusetts Anti-Tuberculosis League. S. H. Stone, Boston.
24 Reporting Cases of Tuberculosis. W. P. Bowers, Clinton, Mass.
25 Tuberculosis Associations as Health Educators. M. M. Davis, Jr., Boston.
26 Responsibility and Opportunity of Teacher in Preventing Tuberculosis. T. F. Harrington, Boston.
27 Medical Inspection of School Children. F. L. Dunham, Brookline, Mass.
28 Tuberculosis Work in This State. A. F. Acton, Boston.

Bulletin of the Johns Hopkins Hospital, Baltimore

August, XXVI, No. 294, pp. 273-308

29 *Relation Between Clinical and Laboratory Data in Tuberculosis. A. H. Caulfeild, Toronto.
30 *Some Cultural Studies on Tubercle Bacillus. S. A. Petroff.
31 Dietl's Aphorisms on Phlebotomy. N. B. Gwyn, Philadelphia.
32 Early Diagnosis of Pulmonary Tuberculosis. L. Hamman, Baltimore.
33 *Results Obtained from Induced Pneumothorax Treatment of Pulmonary Tuberculosis: Brief Report. M. F. Sloan, Townson, Md.
34 Brief Epitome of Results of Sanatorium Treatment. S. Wolman and I. I. Hirschman.
35 *Concerning Occurrence of Tubercle Bacilli in Circulating Blood. C. R. Austrian and L. Hamman, Baltimore.

29. Relation Between Clinical and Laboratory Data in Tuberculosis.—From continued observation, utilizing both the two laboratories and the clinical findings, Caulfeild has come to regard a marked inhibitive serum reaction as significant of high resistance to the tubercle bacillus, and particularly so if the tuberculin sensitiveness is either marked or minimal. Whether a marked inhibitive serum reaction can be found with a nonactive tuberculosis, Caulfeild claims cannot possibly be satisfactorily determined by observations on human beings. In fact the actual proof of the relationship of tuberculin sensitiveness and the serum reaction to the clinical progress can only be proved by experimental work with animals. In November, 1912, the author collected samples of blood from different cattle, and at the same time made an intracutaneous or subcutaneous tuberculin test, or both. Thirty-two animals have been so examined and certain of these repeatedly tested. The results showed correlated data very comparable to those obtained with human beings. In only one instance did Caulfeild obtain an indifferent reaction with an absolutely tuberculin-negative reaction. As the animal was an expensive thoroughbred it was not necropsied. One animal, a Jersey cow, showed marked complement fixation on four different occasions between July and November, 1914. This cow retrogressed so rapidly from July that she had to be killed in November, and the necropsy showed very extensive tuberculosis. The tuberculin reactions had always been very marked. Moreover, this was the only animal that gave complement fixation, all the others showing either the indifferent or various degrees of the inhibitive serum reaction.

30. Some Cultural Studies on Tubercle Bacillus.—A culture medium containing whole egg, beef or preferably veal juice and gentian violet has yielded uniformly positive results in Petroff's work. This medium contains: One part of meat juice, two parts of the egg (white and yolk), gentian violet sufficient to make a solution of 1:10,000. Equal parts of fresh sputum and 3 per cent. sodium hydroxid are shaken well and incubated at 38 C. (100.4 F.) for from fifteen to thirty minutes, the time for incubation depending on the consistency of the sputum. This mixture is then neutralized to litmus paper with hydrochloric acid and centrifugalized at high speed for ten minutes, the supernatant fluid is decanted and the sediment inoculated into the medium. Feces are collected in wide-mouthed jars, a fresh morning specimen giving the best results. The feces are diluted with three volumes of water, mixed well and then filtered through several thicknesses of gauze to remove solid food particles. The filtrate is saturated with sodium chlorid and left undisturbed for a half hour. At the end of that time all bacteria will be found floating. This floating film is collected with a deflagration spoon in a wide-mouthed bottle, and an equal volume of normal sodium hydroxid is added. This is shaken well and left in the incubator, at 38 C., for three hours. It should be shaken every half hour, neutralized to sterile litmus paper with normal hydrochloric acid, centrifugalized, and the sediment inoculated into several tubes containing the medium.

33. Results Obtained from Induced Pneumothorax Treatment of Pulmonary Tuberculosis.—Of 43 patients treated by Sloan and his associate Hamman according to Forlanini's method, from three months to three and a half years, 18, or 41 + per cent., have died, and 25, or 58 + per cent., are living. Of these 25 living, 8 or 19 + per cent. of the whole, are doing ill; 11, or 26 + per cent. are doing well and are working part time. Some of these are inclined to resume their former full working time, but refrain from doing so on medical advice. Six, or 14 + per cent., have resumed all their former business and social obligations. Five of these have been working for over two and one-half years. The induced pneumothorax treatment applied to 42 patients with moderately or far advanced pulmonary tuberculosis and one with bronchiectasis, and in whom the prognosis was bad, influenced the progressing course of the disease little or none at all in 60 per cent. It did, however, stop distressing symptoms in a large number of these. It has given, in 11 per cent., perfect health and complete working capacity for over two and one-half years.

35. Occurrence of Tubercle Bacilli in Circulating Blood.—In pulmonary tuberculosis Austrian and Hamman were unable to demonstrate the presence of tubercle bacilli in the blood in a single instance, notwithstanding the fact that many of the patients when examined were in the last stages of the disease. In animals, when the disease remains localized in the lungs, tubercle bacilli are not found in the circulating blood. When the disease becomes generalized, as it does in the last stages of pulmonary infection and very soon after overwhelming intravenous injections, circulating tubercle bacilli are frequently demonstrable. The evidence presented points strongly against the mobilization of tubercle bacilli by the injection of tuberculin. A larger number of the positive results was revealed by the method of animal inoculation than by the microscopic examination of the sediment obtained by treating blood according to the acetic-acid-antiformin method.

Indiana State Medical Association Journal, Fort Wayne

July, VIII, No. 7, pp. 323-366

36 Heredity in Relation to Malignant Diseases. V. H. Moon, Indianapolis.
37 Importance of Early Diagnosis of Cancer. C. N. Comba, Terre Haute.
38 Precancerous Lesions. W. D. Gatch, Indianapolis.
39 Relationship of Gastric Ulcer to Gastric Cancer. G. W. McCaskey, Fort Wayne.
40 Roentgen Ray Diagnosis of Cancer of Gastro-Intestinal Tract. A. M. Cole, Indianapolis.
41 Treatment of Inoperable Malignant Disease. B. P. Weaver, Fort Wayne.
42 Indications and Contraindications for Operative Treatment of Cancer. E. Walker, Evansville.
43 Cancer in Indiana. J. N. Hurty, Indianapolis.

Iowa State Medical Society Journal, Des Moines

July, V, No. 7, pp. 263-310

44 Some Variations in Sphenoidal Sinus as Found in Anatomic Laboratory of S. U. I. H. J. Prentiss, Iowa City.
45 Diagnosis of Sphenoidal Sinus Empyema. W. F. Boiler, Iowa City.
46 Intestinal Obstruction. B. C. Everall, Waterloo.
47 Cytology of Blood Stream in Apparently Normal Individuals. J. B. Rogers, Independence.
48 Case of Purpura Fulminans. M. L. Turner, Des Moines.
49 Uterine Displacements. J. E. Ridenour, Waterloo.
50 Ureteral Kink; Report of Case. A. J. Farnham, Waterloo.

Journal of Cutaneous Diseases, New York

August, XXXIII, No. 8, pp. 555-610

51 *Histopathology of Mycosis Fungoides. F. C. Knowles, Philadelphia.
52 Lichen Sclerosus Valvae. D. W. Montgomery and G. D. Culver, San Francisco.
53 Significance of Eosinophilia in Dermatology. M. L. Ravitch and S. A. Steinberg, Louisville, Ky.

51. Histopathology of Mycosis Fungoides.—The characteristic features of the histologic picture of mycosis fungoides, according to Knowles, consists in the great multiformity of cells, including plasma cells, numerous mitoses, the location of the cellular infiltration in the upper corium, the papillary and subpapillary portions, and the papillae, and marked changes in the epidermis. Mycosis fungoides is distinguished from the syphilitic granuloma by less multiformity of cells, more plasma cells, and the greatest infiltration of the cellular elements surrounding the widely dilated blood vessels in the latter disease. Mycosis fungoides is differentiated from the tuberculous granuloma by the lack of multiformity of the cellular infiltration, which is not located around the blood vessels, the large number of plasma cells, giant cells with central casecation, and the early disappearance of the collagenous bundles in the latter affection. Mycosis fungoides is eliminated from sarcoma cutis by the regularity in size and shape of the cells, the presence of a fine fibrillar network between the cells, the fact that the growth begins in the reticular layer and remains limited to it unless ulceration occurs in the latter condition. Mycosis fungoides is excluded from the various leukemic and pseudoleukemic growths of the skin by the finding of a pure lymphocytic infiltration of the corium and subcutaneous tissue, stopping with a very sharp line just beneath the papillary layer in the latter diseases. Most authorities agree as to the absence of mitoses, of plasma cells, and imperfect giant-cell formation in leukemia cutis. The deduction is obvious, that as mycosis fungoides gives a distinct histologic picture, the disease is a separate entity.

Kentucky Medical Journal, Bowling Green

July, XIII, No. 8, pp. 305-354

54 Malignant Growths of Prostate. C. G. Huffman, Louisville.
55 Roentgen Therapeutics. J. J. Rodman, Owensboro.
56 Roentgen Diagnosis. M. Casper, Louisville.
57 Conservation of Human Life. B. P. Earl, Charleston.
58 Two Hundred and Four Cases of Labor with Two Hundred and Eight Births. J. F. Jones, Mount Sterling.
59 Duty of Physicians to Themselves, to Profession and to Laity. W. G. Kingsolving, Eddyville.
60 Cerebral Concussion and Compression. J. F. Daugherty, Demossville.
61 Relation of Hospital Nurse to Physician, and Relation of Physician to Nurse. S. E. Dock, Paducah.
62 Tabes Dorsalis and Paresis. C. H. Kendall, Morgan.
63 Treatment of Dysentery. W. L. Mosby, Bardwell.

Lancet-Clinic, Cincinnati

July 31, CXIV, No. 5, pp. 93-112

64 Original Work on Exclusion of Pyloric Antrum for Ulcer. W. Bartlett, St. Louis.
65 Modern Dosage of Diphtheria Antitoxin; Report of Case of Laryngeal Diphtheria. A. J. Bell, Cincinnati.
66 Appointment and Management of Local Examiners. J. H. Florence, Houston, Texas.
67 Case of Epistaxis of Syphilitic Origin. G. A. Hinnen, Cincinnati.

Laryngoscope, St. Louis

July, XXV, No. 7, pp. 385-537

68 Index Medicus of Oto-Laryngology for 1914 and Abstracts of Important Papers Published.

Maine Medical Association Journal, Portland

July, V, No. 12, pp. 431-456

69 Heart-Block, or Adams-Stokes Disease; Report of Case. I. B. Gage, Atlantic.
70 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.

Medical Record, New York

August 14, LXXXVIII, No. 7, pp. 257-298

71 *Bone Graft Wedge in Treatment of Habitual Dislocation of Patella. F. H. Albee, New York.
72 Lying-In of Gargamelle. D. W. Montgomery, San Francisco.
73 Seven Clues to Baldpate. W. P. Cunningham, New York.
74 Thermo-Couple Thermometer. A. F. Holding, New York.
75 Advantages of Kelly's Method of Cystoscopy in Women. H. N. Vineberg, New York.
76 *Dependence of Tuberculosis on Respiratory Insufficiency of Upper Air Tract. W. S. Bryant, New York.
77 Multi-Pollen Vaccines in Treatment of Hay Fever. H. Iskowitz, New York.
78 Relation of Low Temperature Fermentations as Affecting Sanitary Character in Milk. J. M. W. Kitchen, East Orange, N. J.
79 Causation and Treatment of Pellagra. T. Shaw, San Antonio, Tex.

71. Bone Graft Wedge in Habitual Dislocation of Patella.—A semilunar incision is made by Albee extending to the outer side of the patella sufficiently long to reach below the tibial tubercle and to above the external condyle. Without unduly disturbing the underlying joint structures, the external condyle is incised with a broad thin osteotome on its external surface, making a bone incision of from 1½ to 2 inches in length, and about ½ to ¾ inch below its anterior articulating surface, and nearly in line with the long axis of the femur. The bone incision allows the anterior surface of the external condyle to be raised to a plane above the internal condyle, by producing a greenstick fracture near the intercondylar groove, the object being to place a permanent and rigid obstacle in the way of the outward displacement of the patella. When the anterior segment of the external condyle has been pried forward sufficiently to demonstrate its obstructing effect, the width of the bone gap thus formed is measured with calipers and a section of bone sufficiently large to fill this cuneiform gap is removed from the crest of the tibia through the lower portion of the same skin wound extended below the tubercle. Before the graft is removed, it is drilled obliquely in one or two places so that it may be pinned to the under portion of the external condyle when put into place. Dowel pins, made from an additional portion of the bone removed from the crest of the tibia at the time the graft is obtained, are rounded to fit the drill holes in the graft.

76. Dependence of Tuberculosis on Respiratory Insufficiency of Upper Air Tract.—One of the most important requirements for the prevention of tuberculosis as well as for its treatment, is an abundant and continuous supply of fresh, pure air. Another requirement, every bit as necessary as the fresh air supply, is a healthy mucous membrane. Any rhinopharyngeal obstruction removes the possibility of the presence of either of these requirements for immunity to tuberculosis. Therefore, as the most successful means to prophylaxis, Bryant advocates not out-of-door life; not an abundance of fresh, pure air; not avoidance of overcrowding; not forced feeding; not the absence of tuberculosis bacilli, either human or bovine, from the food; not the segregation of infected individuals; although all these are useful measures, but the providing of free rhinopharyngeal passages, which prevent an abnormal susceptibility of the

mucous membrane and allow free ingress of a sufficiently abundant supply of fresh, pure, stimulating air to the lungs.

Modern Hospital, St. Louis

August, V, No. 2, pp. 71-144

80 Joseph L. Hudson Memorial Building of Harper Hospital, Detroit. W. Smith, Detroit.
81 Organization of Domestic Departments of State Hospital for Insane at Howard, R. I. A. H. Harrington, Howard, R. I.
82 Occupation for Mental Cases During Institutional Care. C. W. Sawyer, Marion, Ohio.
83 Meat Extracts, Proprietary Preparations and Beef, Wine and Iron. J. P. Street, New Haven, Conn.
84 King's Daughters' Hospital at Portsmouth, Va. F. E. Leslie, Portsmouth, Va.
85 Trend of Modern Hospital Service. J. A. Hornsby, Chicago.
86 Educational Function of Hospitals. L. F. Jermain, Milwaukee, Wis.
87 Hospital's Duty to Medical Science for Furtherance of Human Welfare. J. L. Yates, Milwaukee, Wis.
88 Hospital Superintendent and Architect. W. C. Hill, Boston.
89 Hospital Equipment. L. M. Warfield, Milwaukee, Wis.
90 Progress in Nursing. H. Leck, Detroit.
91 Effect of Legislation on Schools of Nursing in California. A. Jamme.

New York Medical Journal

August 14, CII, No. 7, pp. 329-350

92 Treatment of Obesity. B. Robinson, New York.
93 Cardiovascular Disease. E. E. Cornwall, New York.
94 Therapeutic Indications for Various Electrical Currents. W. B. Snow, New York.
95 Study of Drug Addiction. T. J. Mays, Philadelphia.
96 Tic or Habit Spasm. M. Grossman, New York.
97 Value of Some Tests of Renal Permeability. R. H. Greene, New York.
98 Treatment of Nervous Syphilis. C. R. Ball, St. Paul.
99 *Bone Pin Graft in Painful Flatfoot, Paralytic Valgus, and Other Painful Deformities of Foot. R. E. Soule, New York.
100 Roentgenoscopic Evidence in Appendicitis. P. Eisen, Chicago.
101 Newer Therapeutics in Otology. Use of Mixed Vaccines. S. Moskowitz, New York.
102 Need of Urethroscope in Diagnosis of Pathological Conditions in Anterior Urethra. J. Broadman, New York.

99. Bone Pin Graft in Flatfoot.—The astragaloscaphoid joint is exposed through an incision about 2 inches long on the dorsum of the foot, in line with the tendon of the anterior tibial muscle and just internal to it. The ligaments attached to the upper border of this joint are incised and freed. The articular cartilages of the head of the astragalus and corresponding concavity of the scaphoid are removed so as to preserve the ovoid head of the astragalus and the concavity of the scaphoid. The foot is adducted to a normal positon, and a hole is drilled from before backward through the inner extremity of the scaphoid bone and into the head of the astragalus, in a direction somewhat obliquely across the foot upward toward the body of the astragalus. The hole is from 1½ to 2 inches in depth, and in diameter according to the size and weight of the patient from one eighth to three sixteenths of an inch. The drill is disengaged from the motor and left in positon in the drilled hole, thus holding the foot in the desired corrected position until the bone pin is obtained and inserted in its place. This bone pin is removed from the crest of the tibia and shaped to fit the hole drilled to receive it. This bone pin is driven into position immediately after the drill is removed from its hole and while the foot is accurately held by an assistant. Should the pin be longer than needed and protrude at the point of entrance into the scaphoid bone, it is cut off flush with the bone surface. The skin wound is closed with catgut without drainage, and dressings are applied. A smooth, snug, plaster-of-Paris splint is applied, reaching from the toes to above the flexed knee, which is not removed for four weeks, when the portion including the knee is cut off. The remainder is allowed to remain for from two to four weeks longer, when the entire splint is removed with the wound dressings, and the foot is strapped as for flatfoot. This gives support and also permits some motion of the joints of the ankle and foot. Passive and active exercises are then begun in order to develop the musculature of the leg and foot. In adults, after six weeks, slight weight bearing on the foot can be permitted and function and weight bearing are increased as time and freedom from discomfort indicate.

Oklahoma State Medical Association Journal, Muskogee

August, VIII, No. 3, pp. 91-120

103 Infant Feeding from Standpoint of Country Pediatrist. C. A. Johnson, Kiowa.
104 Treatment of Infantile Diarrheas. H. M. Reeder, Asher.
105 Tuberculosis in Children. W. A. Fowler, Oklahoma City.
106 Tuberculosis. H. C. Childs, Tulsa.

Ophthalmology, Seattle

July, XI, No. 4, pp. 641-905

107 Eyelids and Lachrymal Apparatus of Birds. C. A. Wood, Chicago.
108 Higher Preparation in Ophthalmology and Otolaryngology. F. C. Todd, Minneapolis.
109 Report of Ocular Findings in Two Cases of Xeroderma Pigmentosum. L. W. Dean, Iowa City, Iowa.
110 Trachoma and Its Treatment. L. W. Fox, Philadelphia.
111 Etiology and Psychology of Ocular Imbalance. A. A. Bradburne, Manchester, England.
112 Inefficacy of Iodoform in Case of Tuberculous Iritis. F. Tooke, Montreal, Canada.
113 New and Safe Technic for Cataract Operation. W. A. Fisher, Chicago.
114 Examination of School Children's Eyes, Ears, Noses and Throats. F. Allport, Chicago.
115 Relation of Eyes to Rifle Shooting. R. O'Connor, Oakland, Cal.
116 Some Noncycloplegic Methods of Refraction. W. L. Pannell, New York.
117 Economics of Eye, Ear, Nose and Throat, Together with Economics of Entire Body (Physical Economics). E. E. Holt, Portland, Maine.

Public Health Journal, Toronto

August, VI, No. 8, pp. 365-418

118 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto.
119 Milk Supply in Relation to Tuberculosis in Ontario. J. Race, Ottawa.
120 Some of Troubles of Rural Medical Officer of Health and Their Remedy. M. Powers, Rockland, Ont.
121 Playground Attendance and Playground Director. H. S. Curtis.
122 Realm of Hapsburgs. F. Withrow.

Southern Medical Journal, Birmingham, Ala.

August, VIII, No. 8, pp. 655-738

123 *Statistical Study of Personal Association as Factor in Etiology of Pellagra. P. E. Garrison U. S. N. P. A. Schule, New York.
124 Dietetic Treatment of Pellagra, with Report of Eleven Cases. Y. A. Little, Milledgeville, Ga.
125 Pellagra Status in Panola County, Miss., with Remarks on Etiology and Treatment. G. H. Wood, Batesville, Miss.
126 *Unusual Condition of Nails in Pellagra. W. C. Brownson, Asheville, N. C.
127 *Pellagra Treated with Cacodylate of Sodium. Report of Sixteen Cases. B. H. Booth, Drew, Miss.
128 Pellagra in Panama. B. H. Frayser, Panama City, R. de P. and W. O. Smith, Washington, D. C.
129 Pellagra: Cause and Cure. R. T. Dorsey, Atlanta, Ga.
130 Pellagra as Postoperative Manifestation, with Report of Case. A. DeT. Valk, Winston-Salem, N. C.
131 Pellagra in Egyptian Asylums, 1913. J. W. Babcock, Columbia, S. C.
132 Pellagra in Mississippi. E. H. Galloway, Jackson, Miss.
133 Twenty-Seven Penetrating and Perforating Gunshot Wounds of Abdomen, with Three Deaths. L. Guerry, Columbia, S. C.
134 Prolapsed Ovaries. W. S. Gardner, Baltimore.
135 Intestinal Obstruction. C. Hutchinson, Pensacola, Fla.
136 Ovaritis in Typhoid, with Consequent Amenorrhea and Sterility. R. B. Slocum, Wilmington, N. C.
137 Diaphragmatic Hernia. Report of Five Cases. J. D. S. Davis, Birmingham.
138 Consistency of Cesarean Section in Nephritis and Eclampsia. W. W. Crawford, Hattiesburg, Miss.
139 Some of the Troublesome Sequelae in Accident Surgery. S. Leigh, Norfolk, Va.
140 Simple Emergency Splint (Banana Crate) for Local Railway Surgeons. J. M. Miller, Thomas, W. Va.
141 Case of Cerebral Abscess, Secondary to Chronic Suppurative Otitis Media, Cured by Surgical Intervention. H. O. Reik, Baltimore.
142 Some Phases of Tonsil Question. F. D. Sanger, Baltimore.

123. Statistical Study of Personal Association as Factor in Etiology of Pellagra.—In the endemic centers studied by Garrison and Schule, 42 per cent. of the pellagrous households presented multiple cases. Sixty per cent. of the cases occurred two or more to the household. The age and sex distribution of both first and subsequent cases in the household corresponds roughly with the distribution of the general population. Adult females form a considerably larger proportion of first cases in the household than of subsequent cases. When the first patient in the household is a housewife or a child, there is a much greater tendency for the development of subsequent cases in children. When the first patient in the household is a wage-earner, subsequent cases in

children are extremely rare. The time interval between the first and subsequent cases in the household is quite variable. Twelve months is the interval most commonly observed.

126. **Condition of Nails in Pellagra.**—In two cases of pellagra seen by Brownson a leukonychia was observed on each nail, a white band crossing the nails transversely.

127. **Pellagra Treated with Cacodylate of Sodium.**—Booth has obtained uniformly good results from the intramuscular injections of cacodylate of sodium in pellagra cases. From his experience in this disease he believes that the arsenicals, when administered intramuscularly, have a much more beneficial, in fact altogether different, effect than when administered by the mouth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

August, XII, No. 140, pp. 225-256

1 *Tuberculoma of Pons Varolii; Pulmonary Tuberculosis in Boy Aged Three and One-Half Years. L. Guthrie.
2 Localizing Brain Symptoms (Hemiplegia and Hemispasm) As Early Events in Tuberculous Meningitis. C. O. Hawthorne.
3 *Hernia of Stomach Through Diaphragm in Child Aged Nine Years. W. J. S. Bythell.

1. **Tuberculoma of Pons Varolii.**—Guthrie's patient presented the following symptoms: When sitting up, the chin constantly deviated toward the left side, and the head inclined toward the right shoulder. Eyes, negative. Complete paralysis of left sixth nerve. Eyeball strongly turned inward. No outward movement beyond midline. Power of inward movement of right eye was also lessened. Complete paralysis of left side of face. No loss of sensation on either side of face. The tongue was protruded straight. Soft palate moved normally. Hearing was unaffected. Apparently only the left sixth and seventh cranial nerves were paralyzed. Upper extremities, no apparent weakness nor hypotonia, nor tremors, nor ataxy. Tendon jerks not exaggerated. Lower extremities, movements free, no spasticity nor hypotonia. Knee-jerks active, rather more so on the right side. Ankle clonus absent. Plantar responses sluggish and flexor in type. Tonsils enlarged, and also slight enlargement of posterior cervical, axillary and femoral glands.

About three weeks after admission slight vertical nystagmus was noted, and a fortnight later he appeared to be sensitive to fairly sharp pin pricks all over the trigeminal area on both sides. No signs of implication of other bulbar nerves were discovered, nor was there any evidence of involvement of the descending motor tracts. He was seized with general convulsions and died five hours afterward.

On section, the pons was found to be occupied in its center by a tuberculous mass about 1 inch in diameter. Histologically, the tuberculous focus was found to be much more diffused than the macroscopic appearance indicated. None of the pontine nuclei or nerves could be identified. As the brain was removed from the base of the skull, a small tumor, about the size of a cherry, was left behind, loosely attached to the cribriform plate of the ethmoid. It was of a dark red color; its center on section was soft and caseating. Two or three similar masses were found just beneath the cortex on the frontal lobes apparently arising in the infolded pia mater. They were but loosely connected with the brain substance. The cerebellum was free of such foci of infection. The ventricles were not distended. Throughout the lungs many miliary tubercles were found scattered. There was some fibrosis at the left lung apex with dilatation of the bronchioles. The bronchial glands were enlarged, pale and soft, but not obviously caseating, although distinctly tuberculous. A few tubercles were found on the pleural surface.

3. **Hernia of Stomach Through Diaphragm.**—In Bythell's case the stomach was herniated through the esophageal opening. The other abdominal organs were normal. The previous history consisted of attacks of persistent vomiting for some six months, the condition steadily getting worse. Apparently there was never at any time much abdominal pain.

British Medical Journal, London

July 31, II, No. 2848, pp. 165-204

4 Observations on Six Hundred Eighty-Five Cases of Poisoning by Noxious Gases Used by the Enemy. J. E. Black, E. T. Glenny and J. W. McNee.
5 Phlebotomus or Sandfly Fever. C. Birt.
6 Sandfly Fever in Chitral (N. India). G. F. Graham.
7 Sandfly Fever in Peshawar. J. W. Houston.
8 Bionomics of Maltese Phlebotomi. P. J. Marett.
9 Transport of Cases of Fractured Thigh. C. M. Page.
10 Movement of Diaphragm in Early Pulmonary Phthisis. H. Walsham and W. Overend.
11 *Beta-Naphthol Poisoning Occurring During Treatment of Ankylostomiasis. W. B. Orme.
12 Diagnosis of Gout. J. B. Berkart.
13 Care of Illegitimate Baby. A. D. Fordyce.

11. **Beta-Naphthol Poisoning During Treatment of Ankylostomiasis.**—Orme warns that in individuals suffering from diseases of the kidneys beta-naphthol should be used with utmost caution, if at all.

Journal of Laryngology, Rhinology and Otology, London

August, XXX, No. 8, pp. 297-328

14 Warfare Injuries and Neuroses. W. Milligan and F. H. Westmacott.
15 *Abnormally Long Styloid Process Causing Throat Symptoms. W. S. Syme.
16 Otolaryngological Cases from Military Hospital. A. Ryland.

15. **Abnormally Long Styloid Causing Throat Symptoms.**—The patient whose case is reported by Syme was a medical man, aged 43, rather stout, and with a short thick neck. Three years ago he had a severe tonsillitis. He had suffered from a sensation of dragging in the left side of his throat, worse on swallowing. Some shooting pain was experienced in the left ear, in which also he was slightly deaf at times. At first he was inclined to associate these sensations with the previous tonsillitis, but as the discomfort increased he examined his throat carefully, at first by sight and then with his finger, when he discovered a firm substance about the middle of the left tonsil. On examination with the mirror the throat appeared normal. With the finger a hard nodule was felt about the middle of the tonsil. It gave the impression of being situated in the tonsil and movable with it. A cartilaginous nodule suggested itself, though the dragging sensation on swallowing, the pain shooting into the ear, and a feeling of resistance rather than of actual swelling on that side of the neck externally, made one keep in mind the possibility of it being a long styloid process. The tonsil was enucleated with the snare under local anesthesia. Firm resistance was encountered on tightening the snare. After removal of the tonsil, on examining with the finger, a sharp point of bone was felt piercing the sheath of the constrictor. The muscle was pressed outwards as far as possible and a portion of the styloid process an inch in length was broken off with forceps. The after-history was that of an enucleation, and the symptoms previously complained of disappeared.

Journal of Tropical Medicine and Hygiene, London

July 15, XVIII, No. 14, pp. 157-168

17 Cases of Trypanosomiasis Treated in England. C. W. Daniels.
18 *Administration of Emetin During Pregnancy and Menstruation. A. J. Chalmers and D. Papatheodorou.

18. **Administration of Emetin During Pregnancy and Menstruation.**—In the case of a woman suffering from amebic dysentery, and in the third month of pregnancy an injection of 4 cg. of emetin (alkaloid) was given intramuscularly by the author, with the result that sixteen hours later the patient complained of severe pain on the right side of the pelvis. This pain was increased by pressure, speaking or coughing. As pain and tenesmus from the dysenteric attack were also severe it was decided to give another 4 cg. of emetin, as it was not clear that the pelvic pain was really uterine. Three hours after this second injection she com-

plained of strong pains in the uterus and, at rare and irregular intervals, she experienced a peculiar sensation in the lower part of her abdomen, which she compared to the opening and shutting of a hand. As the abdominal wall was thin and lax the uterus could easily be felt, but nothing abnormal was detected. It was, however, decided to give her repeated small doses of tincture of opium, and later a hypodermic injection of morphin and atropin was administered, but neither of these relieved the pains. As the amebae had disappeared from the feces, and the pains had gradually declined, ceasing entirely 36 hours after the first injection, it was decided to give no more emetin. The lady made a good and quick recovery from her dysentery, and the pregnancy was apparently unaffected. With regard to the action of the drug when given during menstruation the case of a lady is cited, one who was receiving a second course of emetin treatment for amebiasis from which she was apparently cured. Menstruation appeared during this treatment of ½ grain doses daily, but suddenly ceased on the second day of the menstrual period after the third injection of the drug and did not reappear though the injections were stopped. Two subsequent periods were perfectly normal.

Lancet, London

July 31, II, No. 4796, pp. 213-266

19 Observations on Treatment of Wounds in War (Cresol Paste). W. W. Cheyne.
20 *Results of Hypertonic and Permanganate Treatment in One Thousand Cases of Cholera. L. Rogers.
21 Removal of Shrapnel Time-Fuse from Left Shoulder. A. E. M. Woolf.
22 *Persistence of Antibodies in Blood of Inoculated Persons as Estimated by Agglutination Tests. G. Dreyer and A. C. Inman.
23 *Value of Turpentine as Hemostatic. G. G. Turner.
24 Signification of Acetone Bodies in Urine. B. Derham.

20. **Results of Hypertonic Saline and Permanganate Treatment of Cholera.**—In 1906 Rogers commenced giving normal saline solutions in large amounts intravenously, and the mortality fell from 59 to 51.9 per cent., only to rise again in 1907 (when he was absent on leave) to 59.9 per cent. In 1908 he commenced the use of hypertonic salines intravenously, and the mortality at once fell to 32.6 per cent. Late in 1909, on adding large quantities of permanganates by the mouth with a view to destroying the toxins in the bowel by oxidation, a further reduction in the mortality was obtained, to 25 per cent. in 1,003 consecutive cases in the course of six years. During the last three years the mortality has been 23.5 per cent., and in the first half of 1915, which is the time of the year when the mortality is nearly invariably higher than in the second half, it has fallen to 20 per cent., or practically one-third of the rate in the same hospital during the 11 years before Rogers commenced his investigations.

22. **Antibodies in Blood.**—All the normal individuals examined by Dreyer and Inman had received one or two doses of army typhoid vaccine within the period from August, 1914, to the end of March, 1915. The agglutination tests were carried out in the course of the last ten days in April. For at least eight months after a single or double dose of typhoid vaccine the serum of every inoculated person contained relatively large quantities of antibodies—namely, agglutinins. The maxium content of agglutinin per cubic centimeter of serum found in any inoculated person was 1,500 standard agglutinin units; and no inoculated person showed less than 30 units per c.c. of his serum. On the other hand, in no case, of 30 persons examined at different times and places, has the serum of noninoculated individuals, who had not had typhoid fever, ever exhibited an agglutinin content reaching 10 units per cubic centimeter of serum. Just over half the persons examined between four and six months after inoculation showed an agglutinin content of 130 units or more per cubic centimeter of serum. Persons who received two doses of vaccine usually, but not always, exhibited a higher agglutinin titer than those who had only one dose. Although the titer of serum in persons who had not been inoculated before, and only received a single dose of vaccine, may in some instances at first be as high as or even higher than that of those who received two doses, it was found that after a certain lapse of time it falls to a lower level than in the latter individuals. In persons who had been inoculated before (within six years) the agglutinin titer maintained a high level for a longer period than in the case of those not previously inoculated. The importance of repeated inoculation is therefore clearly not so much that it induces of necessity a higher initial immunity, but that it ensures with certainty a more persistent one.

23. **Turpentine as Hemostatic.**—The principal sphere of turpentine as a hemostatic, according to Turner, is in cases of secondary hemorrhage in which no bleeding point can be caught but in which hemorrhage is nevertheless alarming. Turpentine is an antiseptic, and gauze saturated with it keeps wonderfully sweet; while by its action on the living tissues it gives rise to a slimy pus which greatly facilitates the removal of the gauze in the course of forty-eight hours. The only local inconvenience to which it may give rise is some blistering of the skin, which need not occur if care is exercised in its application. It may also be of great help in primary hemorrhage.

Archives mens. d'Obstétrique et de Gynécologie, Paris

July, IV, No. 7, pp. 257-288

25 *Sterilization in Interests of the Hygiene of the Race. E. Essen-Moeller (Lund).
26 *Danger for Fetus from Disguised Morphin Given Parturient. (Tocanalgine ou antalgésine. Analgésique obstetrical). L. Tissier.
27 Measures to Repress Feticide. (La lutte contre l'avortement et le relèvement de la natalité en France). G. Vitoux.

25. **Sterilization and Race Hygiene.**—Moeller discusses in particular the question as to the advisability of rendering women sterile who suffer from habitual puerperal psychoses requiring asylum treatment up to six months after each childbirth. In five cases of the kind he performed salpingectomy after the third, fifth, eighth or ninth pregnancy. In two other cases he sterilized an imbecile woman pregnant twice, once from incest, and an epileptic IV-para. He reviews the history of such measures in America, adding that the alienists of Switzerland in their annual meeting in 1905 unanimously voted in favor of legislation for operative sterilization in certain cases. The benefit to the race from shutting off the further production of feebleminded is shown anew by the statistics for Sweden. With a population of five and a half millions, there are records of 18,000 insane and 14,000 idiots, 20,000 imbeciles and 7,000 epileptics. Some assert that these individuals procreate in numbers above those of the other elements of society. Sterilization arrests this without the by-effects or irreparable condition left by castration. He does not approve of legislation on the subject of artificial sterilization. "While approving of the optimism that inspired the legislative measures adopted in America," he remarks, "for my part I can regard them only as premature. Our knowledge of the science of heredity is still too imperfect to justify the consequences of such sweeping measures. It seems to me a little unjust to pass laws on a subject that is not yet comprehended by public opinion. This is shown by the fact that in the state of Iowa, for instance, the law has never been applied in practice. The delicate nature of the question and the possibility of error and abuses are not done away with by legislation." Protection against these lies in the physician's sense of personal responsibility, but he regards it as absolutely indispensable that a skilled consultant should approve.

26. **Dangers of Morphin—Tocanalgine—for the Fetus.**—Tissier exclaims that in all ages fraudulent claims and promises to banish the pains of parturition have met with ready credence on the part of the public. Only a few years ago Chevalier Ramognino was flooding the marts with his circulars and pictures extolling the efficacy of his *lotion de délivrance*. "And as late as last summer," Tissier continues, "under a scientific façade, a vast enterprise was skillfully launched, with the connivance of a physician-pharmacist, and very nearly succeeded. From the start, the promoters of Tocanalgine spoke with such positive assurance that not one physician ventured to doubt their assertions and, at the

first, the confidence of the medical men among us was captivated. Notwithstanding all this, the remedy was a lamentable failure. The findings of the chemists analyzing it tore off the mask of this remedy of secret composition and upset its game. The deception was enormous."

"As the promoters seem to be pushing it again," he continues, "improbable as this would seem," he reiterates that the remedy in question is simply morphin, which, it is claimed, has had its toxicity annulled by yeast while losing none of its powers as an anesthetic, or even having them enhanced. The first reports were extremely favorable; the pains of labor were certainly abolished and the infants born in mild apnea were soon revived. But the laboratory men insisted that yeast is unable to annul the toxic action of a stable body like morphin, and interrogation of the responsible head of the firm making the remedy showed such ignorance of pharmaceutic reactions that the questioners were stupefied. "In short, except for the variable addition of ammonia or yeast, the remedy was nothing but morphin. The particularly aggravating circumstance is that there was no exact dosage and that sometimes there was more and sometimes less of the active substance. Four ampules taken at random contained respectively 1.57, 1.95, 2.50 and 2.60 per cent. morphin hydrochlorate and no ammonia hydrochlorate and no oxydimorphin." . . . "The women did not suffer from the use of the remedy; it might even be said that all were actually relieved by it. But this cannot be said of the children; the susceptibility of infants to opium is well known. Many of them were born apparently dead and for long minutes inspired the gravest concern, to state it in the mildest terms. Some had particularly deplorable effects from it in this respect, but circumstances have prevented the publication of their experiences."

Tissier used the remedy twice, but says he will never try it again; each time extreme efforts to resuscitate the child were required for half an hour in the first and for five or six hours in the second case. In other cases of which he knows, it proved impossible to revive the children. "In one case delivery proceeded normally in a few hours without complications, but the husband, a medical officer serving at the front, had left strict orders to give the remedy, which was done. The child never cried and died the twenty-sixth hour. The magic transformation of the maternity ward into a palace of silence is something that any physician can always realize with morphin. But **Tocanalgine**, Antalgésine and Antalgine, with the *lotion de délivrance*, miracle waters and other balms, which were at least harmless in themselves, should be relegated to the museum of cast-off accessories of farces and comedies."

Bulletin de l'Académie de Médecine, Paris

July 6, LXXIII, No. 27, pp. 1-24

28 Serotherapy of Cerebrospinal Meningitis. P. Menetrier and A. Pascano.
29 The Soldier's Ration. (Dans la ration actuelle du soldat en campagne il faut diminuer la viande et augmenter les légumes et le vin). A. Gautier.
30 Recovery After Extraction of Scrap of Shell from Inner Table of Parietal Bone Three Weeks After Injury. Oui.
31 Unreliability of Pyoculture. E. Agasse-Lafont.

July 13, No. 28, pp. 25-72

32 *Typhoid in the Vaccinated. L. Landouzy.
33 Measures Proposed to Discourage Importation of Foreign Drugs. Grimbert.
34 Wine in Soldier's Ration, and Alcoholism. L. Landouzy.
35 Pyoculture and Opsonic Index. F. Trémolières and P. Loew.
36 *Infusion into Severed Vein during Amputations. (L'injection massive de sérum dans la veine fémorale au cours de l'amputation de cuisse et la désarticulation de la hanche). M. Savariaud.
37 *Typhus in Algeria. Ciavaldini.
38 Abuse of Antiseptics and Sea Water in Dressing Wounds. M. de Fleury.

32. **Typhoid in the Vaccinated.**—Landouzy declares that the number of antityphoid inoculations made is of far less moment than the dosage. He also insists that the statements of the soldiers in regard to preceding inoculations are liable to be vague and confusing; they do not really know what was done to them, and the various vaccines differ widely in strength. For these and other reasons he thinks that the reports of "typhoid in the vaccinated" must be viewed, as a rule, with considerable skepticism.

36. **Infusion During Amputations.**—Savariaud refers to amputation of the thigh or exarticulation of the hip joint. The danger of operative shock is so imminent with these serious operations that he sought to ward it off by injection of saline directly into the femoral vein. It is thus possible to infuse up to 3 pints (1,500 gm.) in two or three minutes. As the ligated femoral artery is under one's eyes at the same time, the pulsation in it shows at once how the blood pressure is rising. He remarks that the surgeon returning after an absence of two or three minutes and finding the full pulse beat would be apt to think that his patient had been changed. The advantages of this technic are obvious; especially that there is no need to seek for a vein in the exsanguinated patient. Another advantage is that the smaller arteries begin to bleed and can thus be readily located and ligated. If a little air gets into the vein, it seems to be absorbed harmlessly on the long journey to the heart; he has never had any trouble from this source, although he worked with an ordinary enamel irrigator and tube.

37. **Typhus in Algeria.**—Ciavaldini relates that the natives in Algeria have suffered much from the war as the price of grain rose. Exanthematous typhus appeared in the cities and prisoners and spread among the tribes. In his district one tribe had twenty-four cases, with two deaths, but he succeeded in restricting the epidemic to the tribe in question by keeping it together in one place, which the members were not allowed to leave, and keeping them supplied with food. The café in town where the first infection was derived was also isolated. By this means typhus was stamped out in his district.

Presse Médicale, Paris

July 15, XXIII, No. 32, pp. 253-260

39 Effect of and Protection Against Asphyxiating Gases. (Etude clinique, anatomo-pathologique et histo-chimique des cas d'intoxication par les gaz irritants employés par les allemands à Langemarck). R. D. de la Rivière, J. Leclercq and F. Lévy.

July 22, No. 33, pp. 261-268

40 *Portable Filter, Sterilizer and Cooler for Drinking Water. L. Binet.
41 *Locke's Solution for Arrest of Hemorrhage in and Rinsing Out of Wounds. J. Gautrelet.
42 *Auscultation of Venous Pulse. O. Josué.

40. **Improvised Filter and Cooler.**—Binet improvised the tank shown in the illustration, using a large pail or can to which a stout handle was fastened. A tin box was soldered over a hole in the bottom. The floor of this tin (candy) box was perforated with rows of holes, and a spring was attached to the cover and to the bottom of the box. The spring is enclosed in a tube made by rolling up a sheet of tin, obtained, with solder, from tin cans. A chain is attached to the water-tight cover of the box, and the box is filled with alternate layers of charcoal and well-packed cotton. Suspended in the stream, the pail soon fills up with the filtered water. Then by loosening the chain, the spring cover drops back water-tight on the box, and the whole pail, full of filtered water, is ready to be carried off to use. The water can be sterilized with potassium permanganate, 0.03 gm. to the liter, or six drops of tincture of iodin to the liter, or with a calcium hypochlorite tablet.

Diagram showing construction of portable filter.

41. **Locke's Solution in Hemorrhage.**—Gautrelet expatiates on the importance of Locke's solution as the "sérum physi-

ologique par excellence." It respects the natural defenses more than any other fluid known, and hence should be used exclusively for cleansing out wounds and arresting hemorrhages, and for intravenous infusion. The formula for it he gives as 8 gm. sodium chlorid; 0.2 gm. each of calcium chlorid, potassium chlorid and sodium bicarbonate, with 1 gm. glucose and 1,000 c.c. distilled water, the whole oxygenated to saturation.

42. Auscultation of Venous Pulse.—Josué gives an illustrated description of his method of ausculting the jugular vein, which is proving very instructive. It differentiates at once total bradycardia from heart-block bradycardia and permits precision diagnosis of complete arrhythmia resulting from auricular fibrillation and extra-systoles. The stethoscope is applied at the base of the neck, as close as possible to the clavicle, between the sternal origin and the clavicular origin of the sternomastoid muscle. The stethoscope is worked in between these tendons of the sternomastoid and is held slanting at an angle of 45 degrees. Some skill is required not to press too hard on the vein or be misled by a murmur in the adjacent carotid. The patient must lie flat, without a pillow, and the room must be absolutely quiet. The radial pulse should be palpated at the same time. A number of tracings in health are given and the differences are pointed out between these and the tracings in cases of heart block and total arrhythmia. The auscultation findings and the pulse tracings always showed complete agreement, and this was the means by which the former were interpreted at first.

Archiv für Gynaekologie, Berlin

CIV, 2, pp. 189-392. Last indexed May 1, p. 1532

43 Heteroplasia in Carcinoma of Uterus. L. W. Strong (New York).
44 *Case of Congenital Scoliosis. P. Werner.
45 *Cancer of the Placenta; Two Cases. (Chorioma malignum.) P. Böhi.
46 Case of Tuberculosis of the Placenta and Fetal Membranes. W. Lanz.
47 Fate of the Ruptured Point in Ovarian Follicle. (Schicksal der Follikelsprungstelle). W. Strakosch.
48 Dwarf Growth with Polydactylia. (Zwergwuchs). P. Werner.
49 *Prognosis in Puerperal Fever Based on Bacteriologic and Histologic Findings. K. Warnekros.
50 Efficacy of Oxidation Product of Narcotin Alkaloid of Opium—Cotarnin—in Gynecologic Hemorrhage. (Cotarnin und seine Anwendung.) H. Offergeld.

44. Congenital Scoliosis.—The child presented several other deformities and examination revealed bicornis deformity of the uterus.

45. Cancer of the Placenta.—Böhi's two cases bring to sixty-two the number of cases on record of malignant chorioma of which he has knowledge. In his first case a VI-para of 35 was delivered normally of an infant weighing 2,700 gm. that died in a few days. It was dropsical and the heart was pathologic, the liver rudimentary. Adherent to the placenta by a long pedicle was a sarcomatous tumor the size of a small child's head. It seemed to be complete in itself, and there was no further trouble for a year afterward, when signs suggesting incipient pregnancy or cancer developed. The uterus was curetted and all has seemed to be in good order during the year since. A colored plate shows the sarcoma, shaped like a pear with a very long stem. In the second case a woman of 27 was delivered normally of a healthy child, but the expulsion of the placenta was followed by expulsion of a loose, tough tumor the size and shape of an egg. Both women were frail but free from kidney or heart disease, and the tumor in both was partially sarcomatous although mainly of placenta structure. Colored plates show the macroscopic and microscopic aspects of both.

49. Prognosis of Puerperal Fever.—Warnekros devotes eighty pages and seven colored plates to the bacteriologic and histologic findings in cases of puerperal fever as correlated with the course and outcome. They demonstrate beyond question, he says, the importance and reliability of the information to be derived from continued bacteriologic control of the blood in all cases of abnormally high temperature in parturients. On the one hand, it warns against needless operative measures based on a mistaken, purely clinical, diagnosis. On the other hand, it sounds the alarm in time, when the local process is becoming a general infection, and enables its arrest at once by suitable measures.

Berliner klinische Wochenschrift

July 19, LII, No. 29, pp. 761-780

51 Gas Phlegmons in Roentgen Picture. M. Martens.
52 Bullet in Tissues Turns on Transverse Axis. (Umdrehung der modernen Spitzgeschosse im Wundkanal um ihre Querachse). W. Levy.
53 Influence of Milk and Its Antibodies on Action of Hemolytic Toxins. H. Sachs.
54 Ready-Made Culture Mediums. (Ueber Ragitnährböden.) M. Feiler.
55 Action of Hypophysis Extract on Asthma; Etiology of Asthma. E. Riese.
56 Localization of Metal Foreign Bodies by Roentgen Stereogram. (Der Salow'sche Tiefenmesser.) L. Katz.

Deutsche medizinische Wochenschrift, Berlin

July 15, XLI, No. 29, pp. 845-876

57 Orthopedic Appliances for the Wounded. (Kriegsorthopädisches.) O. Vulpius. Concluded in No. 30.
58 *Mechanics of the Heels of Shoes and Proper Care of the Feet. (Vor- und Nachteile des Stiefelabsatzes sowie die Aufgaben einer vernunftgemässen Fusspflege.) A. Ritschl. Commenced in No. 28.
59 *Angina Pectoris and Raynaud's Disease. T. Schott.
60 Bacteriologic Diagnosis of Diphtheria. H. Berlin.
61 Agglutination Test in Dysentery. (Widalsche Typhusreaktion bei Y-Ruärkranken.) M. Soldin.
62 Combination of Ultraviolet Light and General Diathermy in Treatment of the Wounded. V. Hufnagel, Jr.
63 Sterilizing Brick Oven. (Zur Beseitigung der Läuseplage.) Rudolph.

58. Heels.—Ritschl gives diagrams to show that over-high heels affect injuriously not only the foot itself, but throw the whole weight-bearing mechanism more or less out of gear. By extending a moderately high heel backward, the tendency to pes sursum flexus, as with paralysis of the muscles of the calf, is automatically corrected. In conclusion he appeals to physicians, as the leaders in enlightening the public in matters of health, to teach the necessity for properly constructed shoes and for regular gymnastic exercises of the feet as the most important element of the motor apparatus. The strength and the well being of the entire body depend in a large measure on the condition of the feet, and their development in children should be watched over with special care to avert injurious influences.

59. Angina Pectoris and Raynaud's Disease.—Schott reports a case in which angina pectoris developed in a man with the nervous-trophic and vasomotor phenomena of Raynaud's disease—the whole probably to be ascribed to chronic intoxication of a chemical nature from inhaling nitrite dust in handling explosive powders. Incipient arteriosclerosis was the only other possible causal factor to be discovered.

Medizinische Klinik, Berlin

July 18, XI, No. 29, pp. 795-822

64 Typhus. (Diagnose und Krankheitsbild des Fleckfiebers auf Grund eigner Erfahrungen). C. Bäumler. (Anatomische Befunde bei Fleckfieber). L. Aschoff.
65 *Connection Between Gynecologic Disease and Insanity. (Aetiologie und Therapie von Frauenkrankheiten bei Irren). L. Fraenkel.
66 Arsenic in Flour; Thirty-Six Persons Poisoned. (Ueber Arsenikvergiftung.) P. Michaelis.
67 Sporadic Case of Intestinal Anguillulasis. L. Korczynski.
68 Improvised Clothing Sterilizer. (Zur Abtötung von Kleiderläusen.) Wegner.
69 Disease of the Penis. E. Portner.
70 *Acute Yellow Atrophy of the Liver in Syphilitics. M. Michael.

65. Connection Between Gynecologic Disease and Insanity.—Fraenkel reports as a very suggestive fact that gynecologic examination revealed that a large percentage of 286 women inmates of the insane asylum at Lublinitz were found virgines intactissimae and a number of others probably the same, but in only 18 of the 286 were the gynecologic findings normal. The hymen is generally regarded as a protection of the internal genitals, gynecologic disease generally developing only after the hymen has been torn. This renders

peculiarly significant the fact of the frequency of pelvic anomalies in insane women. The article is continued.

70. **Acute Yellow Atrophy of the Liver in Syphilitics.**—Michael argues against the conclusions of Halbey in his report of a case of acute yellow atrophy of the liver under salvarsan treatment for syphilis (mentioned in these columns July 3, 1915, p. 61). Michael recalls that a number of cases have been published in which this affection or simple jaundice led to an examination of the patient revealing hitherto unsuspected and hence untreated syphilis. He has had two cases of this kind in his practice in a single month recently. Consequently he reiterates that the salvarsan should not be summarily incriminated as the cause of yellow atrophy of the liver.

Münchener medizinische Wochenschrift, Munich

July 6, LXII, No. 27, pp. 905-940

71 Tuberculin Treatment of Children; Forty-Five Cases. H. Koch.
72 Importance of Nervous System as a Factor in Exophthalmic Goiter. (Zur Theorie des Basedow.) A. Oswald.
73 Rupture of Trachea in Boy. (Berstungsrupturen der Trachea.) C. Hörhammer.
74 Substitutes for Bread. (Zur Frage des Brotersatzes.) O. Raab.
75 Reeducation after Injury of the Brain. (Uebungsschulen für Gehirnkrüppel.) E. Fröschels.
76 Rigor Mortis. (Zur Kenntnis der Totenstarre und der physiologischen Vorgänge im Muskel.) L. Wacker. Commenced in No. 26.
77 Wounds of the Spinal Cord. (Verletzungen des Rückenmarks im Kriege.) J. Leva and Bittorf.
78 Estimation of Nervous and Psychic-Nervous Affections. G. Aschaffenburg.
79 Healed Vaccination Pustule Flares up Again Four Months Later during Diphtheria. Eggebrecht.
80 Plastic Operation with Extensor Digitorum. (Ersatz der Interosealmuskulatur der Hand durch Extensor digitorum communis.) C. Müller.
81 Bridge Devices for Extension in Plaster Casts. (Gipsklammer.) J. Stoeger.
82 Union of Surgery and Orthopedics the First Step in Welfare Work for Maimed Soldiers. E. Blind.
83 *Epidemic of Influenza Brought on by Overexertion. (Eigenartige Truppenepidemie.) Heilbronn.
84 Improvised Arrangement for Proctoclysis. (Improvisation des Rektaltropfeneinlaufes.) E. Gelinsky.

July 13, LXII, No. 28, pp. 941-972

85 Fat Content of the Human Spleen. (Zur Lehre vom Fettgehalt der menschlichen Milz.) A. Schmincke.
86 *Compact Transformation of Spongiosa of Bones. (Osteosklerose und Anämie.) F. Reiche.
87 Cure of Gangrenous Process in Lung by Artificial Pneumothorax. V. Reichmann.
88 Dislocation of Metatarsal Bones. (Zum Kapitel der seltenen Fusslasionen.) W. S. Moench.
89 Dietary of Average Family in Denmark. (Nahrungsmittelverbrauch dänischer Familien.) M. Hindhede.
90 Psychic Origin of Functional Nervous Disturbance in the Ear. (Hysterische Funktionsstörungen des nervösen Ohrapparates im Kriege.) J. Zange.
91 Gunshot Wounds of the Intestines through the Back. (Retroperitoneale Darmverletzungen durch Rückenschüsse.) A. Peiser.
92 Protection Against Lice. (Entlausungsofen.) E. Seligmann and R. Sokolowsky. (Zur Frage des persönlichen Lausschutzes.) V. L. Neumayer.
93 Magnifying Spectacles to Utilize Relics of Vision. (Wie kann man schwachsichtig gewordenen Soldaten das Lesen wieder ermöglichen?) W. Stock.
94 Paraguay Tea — Yerba Mate — as Substitute for Tea and Coffee. A. Richter.
95 String Attached to Sound Arm Aids in Use of Improvised Prothesis. Rosenstrauss.
96 Ligation of the Carotid. V. Franz.
97 Training School in the Base Hospital. (Lazarettunterricht.) K. Frickhinger.
98 Folding Operating Table. (Verbesserter Feldoperationstisch nach Axhausen.) E. Boerner.

83. **Influenza After Overstrain.**—Heilbronn is the medical officer for a troop detailed for railroad construction. The general health had been constantly good until the men had to work extra hard in the rain for two days; 105 developed sore throats or bronchitis in consequence, and thirty-seven presented typical influenza. He relates the circumstances to call attention to the way in which the barriers to infection were evidently thrown down by fatigue and exposure, and all came down at once. The epidemic confirmed anew the remarkable contagiousness of influenza and the importance of isolation in prophylaxis. This proved useful, besides, from another point of view, as two men thus promptly isolated proved to have typhoid.

86. **Osteosclerosis and Anemia.**—Reiche recalls that Sick published last year three new cases of that general affection of the bones in which compact bone substance usurps the place of the spongiosa, while the entire bone seems to contain a larger proportion of lime than usual. Sick's patients were a brother and sister of 2 and 3½ and a cousin, a girl of 15. Reiche has had a patient with this osteosclerosis, as he calls it, under observation for a number of years. He is now 37, delicately built and pale, but alert and at the head of a large mercantile establishment. The spleen and liver are much enlarged and the osteosclerosis and anemia—the latter probably the result of encroachment on the bone marrow by the general bone process—have all persisted in a practically stationary phase during seven and a half years to date. The bone affection is known to have existed back into childhood, as a history of repeated fractures suggests abnormal fragility of the bones. His parents were syphilitic and he responded positively to the Wassermann test.

Therapie der Gegenwart, Berlin

July, LVI, No. 7, pp. 241-280

99 Diagnosis and Treatment of Six Types of Chronic Joint Disease. (Chronische Gelenkerkankungen.) T. Brugsch.
100 *Pure Salicylic Acid in Treatment of Acute Articular Rheumatism. J. Zadek. Concluded in No. 8.
101 *Treatment of Duodenal Ulcer. L. Strauss.
102 *Treatment of Wounds with Ultraviolet Rays. M. Kork and A. Baumer.
103 Present Status of Optochin in Treatment of Pneumonia. G. A. Waetzoldt.

100. **Salicylic Acid in Acute Articular Rheumatism.**—Zadek admits that salicylic acid is not a specific for acute rheumatism; it does not actually cure the disease but it reduces the pain and enables the joints to be moved freely, while the temperature also declines under it. These same results may occasionally be obtained by physiotherapy, but the salicylic acid medication accomplishes it with infinitely less trouble and inconvenience to both patient and attendants, and the effect is usually far more thorough. But, he adds, neither the salicylic medication nor anything else known will ward off relapses and involvement of new joints and of the heart.

101. **Duodenal Ulcer.**—Strauss reports two cases to illustrate the importance of a presumptive diagnosis of duodenal ulcer when men over 40 have long suffered from disturbances suggesting hyperacidity, especially when the men have been leading a nervously strenuous life. Both his patients had taken sanatorium treatment for their assumed hyperacidity. The pains became so severe in the first case that the man came to the hospital, where he was kept for further observation. He died the next morning and a perforated duodenal ulcer was found at necropsy. The other patient presented the very same clinical picture except that he had once had considerable blood in his stool, ascribed to hemorrhoids at the time. When blood again appeared in the stools, duodenal ulcer seemed certain, and the digestive tract was left in complete repose, not a drop of water or even ice was allowed by the mouth, and no nutrient enemas, merely salt solution by the drop method in the rectum. After twenty-four hours, sips of water were allowed and the fourth day sips of chilled milk. The man was soon free from symptoms and feels still quite well to date, three months later, and there is not even occult blood in the stools. Strauss is ready to operate at the slightest return of trouble, but does not think operative measures required otherwise as the man is no longer under nervous strain. If the patient was liable to excitement and overwork, Strauss would advise an operation at once, as these two cases and others in his experience sustain the assumption of a preponderant nervous element in duodenal ulcer.

102. **Phototherapy of Wounds.**—Kork was unable to detect any influence from the utraviolet rays on deep lying wounds and other lesions, fistulas, etc. With superficial lesions, the effect was inconstant.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 1, XXXVI, No. 52, pp. 801-816

104 Experimental Research on Diathermy. (Sul valore reale della diatermia come mezzo di produzione di calore nei tessuti vivi e morti dell'organismo.) G. Setzu.

Policlinico, Rome

July 18, XXII, No. 29, pp. 957-988

105 The Teeth and Jaws in War. (L'odontoiatria nell'esercito e nella marina in tempo di guerra.) A. Chiavaro. Commenced in No. 28.

106 Operations on the Urethra. (Appunti di chirurgia uretrale.) L. Garovi.

July 25, No. 30, pp. 989-1020

107 Restoration of the External Ear. (Plastica del padiglione dell' orecchio.) S. Gucciardello.

July, Surgical Section, No. 7, pp. 313-360

108 *Retroperitoneal Blood Cyst. G. Paganelli.

109 *Functional Capacity of Kidneys Determined by Test Ingestion of Urea. (La prova dell'azoturia, come metodo di esame della funzione renale.) E. Pirondini. Continued.

108. Retroperitoneal Blood Cyst.—Paganelli's patient was a woman of 43 who had had abdominal pain for a time after a fall down stairs, but then there were no further disturbances for fifteen months. Then a hard and nonsensitive tumor became evident in the left abdomen under the ribs. It increased in size and in a few months induced colic pains, and one night there was clotted blood in the stools. The tumor proved to be a large retroperitoneal cyst, containing 200 c.c. of blood and serum, and was easily shelled out. It had evidently developed from a traumatic hematoma.

109. Alimentary Asoturia as Test of Kidney Functioning.—Pirondini thinks that very valuable information may be obtained from supervision of the elimination of urea in the urine after drinking rapidly 300 c.c. distilled water in which has been dissolved 10 gm. of urea. As preliminaries the bladder is emptied and the subject lies down for half an hour; the bladder is then emptied anew, with the catheter, and then the glass of water with the urea is taken. The urine is then examined for urea at half-hour intervals thereafter for over two hours. His research on the healthy and on persons with kidney disease shows that ingestion of urea modifies to a notable degree the urea content of the urine. The modifications are most pronounced soon after taking the urea, and the test can be applied by the same technic as for Albarran's polyuria test. In this instalment of his communication he gives the curves recorded in a number of healthy persons, reclining or up and about. They harmonize with the findings with test polyuria.

Riforma Medica, Naples

July 17, XXXI, No. 29, pp. 785-812

110 *Primary Tumors Originating in Sheaths of Arteries and Veins; Two Cases. (Contributo istologico e clinico intorno ai tumori primitivi delle guaine vascolari.) V. Marcozzi.

111 Tonsil Extract Useful in Glycosuria and Diabetes. (L'opoterapia delle glicosurie semplici e del diabete mellito, mediante la somministrazione di estratto di tonsille palatine.) G. B. Farmachidis.

July 24, No. 30, pp. 813-840

112 Experimental Transplantation of Joints. (Sui trapianti articolari.) R. Falcone.

110. Tumors in Vessel Sheaths.—Marcozzi was unable to detect any pathognomonic features in his two cases or in those on record. The structure may be of any type of tumor, sarcoma, endothelioma, etc., and usually they are easily enucleated. His patients were young men and the tumors were of mixed sarcoma structure. One was in the neck and one at the root of the thigh. Both were adherent to the neighboring artery and other tissues, but each was successfully removed.

Brazil-Medico, Rio de Janeiro

June 15, XXIX, No. 23, pp. 177-184

113 Nomenclature of Leishmaniosis in South America. (Bouba e leishmaniose são doenças distinctas. Synonymias das leishmanioses na America do Sul.) A. A. da Matta.

June 22, No. 24, pp. 185-192

114 Bacteriologic Diagnosis of Epidemic Cerebrospinal Meningitis. A. Moses.

Semana Medica, Buenos Aires

June 17, XXII, No. 24, pp. 747-774

115 *Injections of Hypertonic Sugar Solution and Indications. (Las inyecciones de suero glucosado hipertonico.) J. F. M. Gomez.

116 Latent Peritonitis. E. P. Siri.

117 Electrocauterization for Tuberculosis of the Larynx. (La galvanocauterizacion en la tuberculosis laringea.) D. A. Vagni.

118 Horse Serum plus Epinephrin Cures Incoercible Vomiting of Pregnancy; Two Cases. (El suero de caballo y la adrenalina en los vomitos incoercibles del embarazo.) G. B. Cavazzutti.

119 Safety Regulations in Underground Work. (El trabajo de los obreros en sotanos y subsuelos. Su reglamentacion.) J. M. Obarrio.

120 Leishmaniosis in South America. (Contribucion al estudio de la fisonomia clinica, clasificacion y sinonimia de las leishemaniosis en la America del Sud.) A. A. da Matta.

115. Hypertonic Sugar Infusion.—Gomez reports experiences which testify to the diuretic, nourishing and diagnostic importance of intravenous infusion of a 30 per cent. solution of sugar. He tabulates the details from a number of cases of various diseases, all confirming his statements. He also tabulates the details of some cases in which the functional capacity of the liver was tested by intravenous injection of a 30 per cent. solution of sugar. When only a tenth of the injected sugar can be recovered from the urine, the assumption of insufficiency on the part of the liver is amply justified. His figures show the beneficial effect of the hypertonic sugar infusion in typhoid, pleurisy, cirrhosis of the liver and neuritis. His dosage was intravenous injection of 500 c.c. of the 30 per cent. solution plus ingestion of 150 gm. of sugar dissolved in 500 c.c. of water. The experiences related were at the Pitié Hospital at Paris, 1914-1915, where Gomez is "extern" and chief of the radiology laboratory in Professor Enriquez' service. He took an hour and a half each time for the intravenous injection of 500 c.c. of the 300 per thousand solution of glucose.

Russkiy Vrach, Petrograd

Feb. 21, XIV, No. 8, pp. 169-192

121 Amebic Dysentery. I. P. Vassilieff.

122 Fish Poison, Its Physical and Chemical Properties and Toxic Products of Suppuration. S. V. Konstansoff. Commenced in No. 7.

Feb. 28, No. 9, pp. 193-216

123 Sanatoriums in the Mountains of the Caucasus for the Tuberculous. O. A. Chechott. Commenced in No. 8.

124 Fusiform Bacilli in Scarlet Fever. V. N. Klimenko.

125 Wounds of Fingers in War. V. N. Markoff.

126 Alkali and Acid Production by Diphtheria Bacilli. V. S. Vesseloff.

127 *Pathology and Etiology of Arteriosclerosis. N. N. Anichkoff. Commenced in No. 8.

March 28, No. 13, pp. 289-312

128 *Diet in Stomach Diseases. B. P. Varipaieff.

129 *Wolff-Junghans' Test for Cancer of the Stomach. S. S. Katznelson.

130 *The Thyroid Secretion in Normal and Pathologic Conditions. N. E. Osokin.

127. Arteriosclerosis.—According to Anichkoff, arteriosclerosis or atherosclerosis is not a degenerative hyperplastic, but an infiltrative hyperplastic process of the walls of the vessels, because experiments on rabbits fed with cholesterin showed the walls of the vessels to be infiltrated with this substance. These infiltrations are accompanied by reactive changes in the form of phagocytosis around the infiltrated places, and fibrous, connective tissue proliferation which occurs quite early. In the second stage, atheromatous ulcers form, as the result of destruction of the newly formed tissue. In the floors of the ulcers cholesterin can be found. This, the degenerative stage, is but a secondary phenomenon, the primary one being the process of infiltration with cholesterin. This is not the product of decomposition, as is generally thought; it is brought from outside and deposited within the walls of the vessels. In rabbits, cholesterin seems to be the sole cause of arteriosclerosis, which can always be produced in them by feeding them with cholesterin, even with the smallest doses, provided it is given for a long time, or it is aided by some other factors, such as increased blood pressure. In human beings, narrowing of the aorta, when there is cholesterinemia, may and does usually lead to arteriosclerosis above the place of stenosis. In other words, a combination of mechanical causes and choles-

terinemia may lead to arteriosclerosis in man. Of these two factors, the cholesterinemia is the more important, the mechanical causes being of secondary value. Anatomic changes in the intima, such as its hypertrophy, are predisposing factors making the vessels susceptible to sclerosis, as they then more readily become infiltrated with cholesterin. This is the reason why arteriosclerosis is a senile affection.

128. **Gastric Ulcer and Hyperacidity Diet.**—Varipaieff has somewhat modified Yarotzky's diet for treatment of hyperacidity and gastric ulcer. At 6:30 a. m. he gives a teaspoonful of bismuth subnitrate with from 3 to 7 drops of belladonna. At 7 a. m. a teaspoonful of calcined magnesia with from 3 to 7 drops of belladonna, and at 7:15 two raw eggs (beaten up). At 9 a. m. (beginning the second day), one teaspoonful of calcined magnesia or calcium carbonate, (calcaria carbonica) and at 9:15, two eggs. At 11 a. m. (the third day) a teaspoonful of magnesia or calcium carbonate and two eggs. At 1 p. m. is given a rectal injection of a solution of sugar (30 gm. of glucose to 500 gm. of water); at 4 p. m. a second rectal injection of the sugar solution. At 6 p. m. several doses of oil, altogether about 100 or 150 gm. oil, after the stomach contents have thus been rendered alkaline. Thus the patient is getting from 1,000 to 1,500 calories during the twenty-four hours. The loss in weight with such an insufficient diet is noticeable only during the first two or three days. This dieting was kept up until the pain disappeared, not less than a week. Milk was not allowed until the second or third week, and by this time the pure oil was stopped. No narcotics were given except the belladonna, and this on account of its specific action on ulcers of the stomach. The treatment must be, of course, individualized. It was successfully carried out on twelve patients whose histories are given.

129. **Albumin Test for Cancer of the Stomach.**—Katznelson studied the reaction of Wolff-Junghans in 21 cases of achylia and in 14 with various degrees of acidity, but all without blood to be detected in the stomach. He did not wash the stomach before giving the test breakfast. In 9 cases of malignant achylia, with complete absence of hydrochloric acid and total acidity not exceeding 16, or total anacidity as in 7 in this group, he found the albumin index between 200 and 400. In 10 cases of benign achylia the index ranged from 20 to 30. In 2 cases of doubtful achylia, cancer probable, it was 100 and 400. (Wolff and Junghans' method for estimation of the albumin in the stomach content with cancer, and their views as to its significance, were summarized, from their original communication, in THE JOURNAL, July 8, 1911, p. 173.) The reagent is a mixture of 0.3 parts phosphotungstic acid; 1 part hydrochloric acid; 20 parts alcohol and water to 200 parts. They apply the test to a set of beakers containing the stomach content diluted in turn from 0.25 up to 10 per cent. In each beaker 1 drop of reagent is superimposed on the diluted stomach content. The index is the dilution in the first beaker in which no ring forms at the point of junction with the reagent. The albumin index is thus the figure representing the dilution: 10, 20, 40, 80, 100, 200 or 400. In Katznelson's cases, he thus found the albumin index in 9 cases of gastric cancer from 200 to 400 (average 355). In his 10 cases of benign achylia it was only from 20 to 80, (average 55). Hence it seems that an albumin index below 80 speaks for benign conditions, above 100 for malignant forms of achylia. As this test is so very simple it must be considered an extremely valuable method for differentiating between malignant and benign achylia. Cases in which even small amounts of hydrochloric acid are present are not suitable for this test, as there is liable to be considerable albumin in the stomach content. The index ranged from 100 to 400 in 14 patients with different proportions of hydrochloric acid in their stomach content although cancer could be positively excluded.

130. **Thyroid Secretion in Normal and Pathologic Conditions.**—Osokin studied the changes in the thyroid after injections of pilocarpin, epinephrin and thyrolytic serum, and found that epinephrin increases the secretory activity of the thyroid. After its prolonged use the gland becomes exhausted, with subsequent atrophy of the cellular elements. Normally there are a number of cells in the thyroid which seem to be peculiarly active.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 26, I, No. 26, pp. 2225-2294

131 Influence of Roentgen Rays on Menstruation. L. F. Driessen.

132 *Bilirubin Content of the Blood Serum in Health and Disease. (De gele kleurstof van het bloedserum.) L. S. Hannema.

July 3, II, No. 1, pp. 401-468

133 *Cerebrospinal Meningitis in the Netherlands. F. J. Hagen and R. R. Rochat.

134 *Analysis of the Pulse Curve in Man. (Polskromme bij den mensch.) K. L. F. Kaiser.

135 Roentgenography in Case of Tabes before Development of Ataxia. H. C. Geuken.

132. **Bile Pigment in the Serum.**—Hannema discusses the causes and significance of the presence of bile pigments in the blood, especially bilirubin. In thirteen cases briefly summarized, the determination of the bilirubin content was of no aid in making the diagnosis as the patients all had unmistakable jaundice, but it permitted estimation of the effect of treatment. The experiences reported apparently demonstrate that every serum contains some bilirubin. Also that in consequence of disturbed elimination of bile, abnormal quantities of bilirubin may pass into the blood, but that this does not inevitably induce jaundice. He describes the technics for estimation of the proportion of bilirubin in the serum sufficiently exact for all practical purposes. In some cases the figure representing the bilirubin content of the blood serum may afford valuable information for differential diagnosis when jaundice develops.

133. **Meningitis.**—A few cases developed in the garrison at Amersfoort and a number of healthy carriers were found. They were isolated and their clothing and rooms disinfected; none of them contracted the disease. On reexamination one or two weeks later, the meningococci seemed to have disappeared. Placards of twelve paragraphs were hung up in the barracks, warning of the serious character of epidemic meningitis and giving means to avoid it and avoid infecting others. By these measures the disease was apparently stamped out before it got much headway. In all the cases that developed there was an exanthem or petechiae but not so diffuse as with an eruptive disease.

134. **Study of the Pulse.**—Kaiser's article is illustrated, showing the application to the pulse of a small instrument devised for another purpose but which is proving extremely useful for recording the pulse both in the clinic and in experimental research. Kaiser has found it more reliable than any other means he has ever tried. The tracings obtained with it are remarkably distinct. The principle is to fasten a large ring, something like an oval napkin ring, on the artery, and then place inside the ring a drum which has a cork cone fastened in the center. The cork cone rests lightly on the artery and moves with it. (The writer of this article, just a week before its publication, succumbed to the consequences of a severe fall, aged 51. He had made a special study of the pulse and blood pressure and the pressure in the abdominal cavity, and published a number of important works on them.)

Hospitalstidende, Copenhagen

July 14, LVIII, No. 28, pp. 685-708

136 Paralysis from Whooping Cough; Four Cases. (Lamhed ved Kighoste.) S. T. Sørensen.

July 21, No. 29, pp. 709-732

137 Congenital Deformity of the Fingers, and Pathogenesis. C. Otto.

Ugeskrift for Læger, Copenhagen

July 8, LXXVII, No. 27, pp. 1089-1122

138 Health and Pathology of Arctic Eskimos. (Om Sundhedstilstanden blandt Polareskimoerne.) P. Freuchen.

July 15, No. 28, pp. 1123-1168

139 Exstrophy of the Bladder with Cancer at Sixty-Two. (Et Tilfælde af total Ectopia vesicae med Vaginadefekt og sekundært udviklet Cancer vesicae hos en 62-aarig Kvinde.) E. Petersen.